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U.S. Coast and Geodetic Survey
Terrestrial magnetism

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DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
E. LESTER JONES, SUPERINTENDENT

TERRESTRIAL MAGNETISM

RESULTS OF MAGNETIC OBSERVATIONS MADE BY THE UNITED STATES COAST AND GEODETIC SURVEY IN 1916

BY

DANIEL L. HAZARD
Chief, Division of Terrestrial Magnetism

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SPECIAL PUBLICATION No. 42

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1917

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CONTENTS.

	Page.
Introduction	5
Distribution of observations on land	5
Secular change of the magnetic declination	6
Instrumental corrections	8
Diurnal variation correction	8
Arrangement of table	8
Magnetic observations on land	9
Descriptions of stations:	
Alaska	17
Arizona	17
Arkansas	18
California	19
Colorado	21
Connecticut	21
Idaho	21
Indiana	25
Iowa	25
Kansas	26
Kentucky	27
Louisiana	28
Maine	28
Maryland	30
Massachusetts	31
Mississippi	32
Missouri	32
Montana	39
New Hampshire	42
New Mexico	43
New York	43
North Carolina	45
North Dakota	45
Ohio	47
Porto Rico	48
Rhode Island	48
South Dakota	48
Vermont	50
Virginia	50
Washington	51
West Virginia	51
Wyoming	51

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RESULTS OF MAGNETIC OBSERVATIONS MADE BY THE UNITED STATES COAST AND GEODETIC SURVEY IN 1916.

By Daniel L. Hazard,
Chief, Division of Terrestrial Magnetism.

INTRODUCTION.

In 1882 the results of magnetic observations made by this bureau prior to 1881, together with descriptions of stations, were published as Appendix 9, Report for 1881. From that time to 1902 the results were published only in connection with a discussion of the distribution or secular change of one or more of the three magnetic elements. In Magnetic Declination Tables and Isogonic Charts for 1902 the declination results were given for all stations occupied up to that time and descriptions were given of the stations occupied subsequent to 1881. From 1903 to 1911 there was published annually an appendix to the Superintendent's report, giving the results of magnetic observations made during the fiscal year (July to June) covered by the report.

When in 1912 it was decided to confine the annual report of the Superintendent to administrative matters and to publish separately the scientific results which had formerly appeared as appendices to the report, the time was deemed opportune to change from the *fiscal* year to the *calendar* year in the publication of the results of magnetic observations in the field. Accordingly, Special Publications No. 15 contained the results of observations made between July 1, 1911, and December 31, 1912, Special Publications No. 20 the results for the year 1913, Special Publication No. 25 the results for the year 1914, and Special Publication No. 36 the results for the year 1915.

Five magnetic observatories have continued in operation throughout the year: At Cheltenham, Md.; Sitka, Alaska; near Honolulu, Hawaii; on Vieques Island, P. R.; and near Tucson, Ariz. Their records have furnished the means for reducing to mean of day the values of declination obtained from the field observations. There will be found in the tables the mean values of the magnetic elements for each of the observatories for the year 1916.

DISTRIBUTION OF OBSERVATIONS ON LAND.

The distribution of the stations on land is shown in the following table, from which it will be seen that observations were made in 33 States and Territories. Numerous old stations were reoccupied in order to determine the secular change of the magnetic elements, and many auxiliary stations were occupied where previous observations had indicated the presence of local disturbance. In the case of these auxiliary stations the observing program was usually very much curtailed, being limited to morning or afternoon azimuth, one set of declination with magnet erect, one set of oscillations, and dip with one needle without reversal of polarities. The lettered auxiliary stations (A, B—) are usually within a few hundred feet of the primary, the numbered stations (1, 2, 3—) several miles away.

Summary of results on land.

State	Localities	Stations	Old localities reoccupied	Declination results	Dip results	Intensity results
Alaska	8	8	2	8	3	2
Arizona	3	4	3	5	5	5
Arkansas	7	14	3	14	12	12
California	10	10	1	10	10	10
Colorado	4	4	0	4	4	4
Connecticut	1	2	1	2	2	2
Hawaii	1	1	1	1	1	1
Idaho	21	30	1	30	24	24
Indiana	1	1	1	1	1	1
Iowa	5	6	1	6	5	5
Kansas	2	2	1	2	2	2
Kentucky	6	6	1	6	6	6
Louisiana	4	6	2	6	5	5
Maine	13	22	4	22	21	21
Maryland	2	2	2	6	6	6
Massachusetts	6	7	3	7	7	7
Mississippi	4	4	1	4	4	4
Missouri	34	55	21	55	52	52
Montana	31	57	4	57	38	39
New Hampshire	5	13	3	13	11	13
New Mexico	2	2	0	2	2	2
New York	8	23	2	23	20	20
North Carolina	4	10	4	10	9	8
North Dakota	21	23	1	23	21	21
Ohio	1	2	1	2	1	1
Porto Rico	4	4	4	5	5	5
Rhode Island	2	2	2	2	2	2
South Dakota	7	7	2	7	7	7
Vermont	3	10	0	10	10	10
Virginia	3	12	3	12	10	10
Washington	1	1	0	1	1	1
West Virginia	1	1	1	1	1	1
Wyoming	1	1	0	1	1	1
Total	226	352	76	358	309	310

SECULAR CHANGE OF THE MAGNETIC DECLINATION.

A comparison of the declination results at "repeat" stations occupied during the year with the results of earlier observations in the same localities is presented in the following table. The letter after the name of a station indicates (*a*) that the old station was reoccupied exactly, (*b*) that the new station was very near the old one, and (*c*) that the new station was some distance (a quarter of a mile or more) from the old one. A tabular value of the annual change refers approximately to the middle of the period from which it is derived. A plus sign indicates increasing east declination or decreasing west declination; a minus sign, the reverse.

Comparison of declination results at repeat stations.

State and station	Former observations		Last observations		Average annual change
	Date	Declination	Date	Declination	
		° ′		° ′	′
Maine:					
Fort Kent (*a*)	1910, Au	21 07.8 W	1916, Jy	21 30.0 W	− 3.7
Calais (*b*)	1906, Se	[a] 17 58.2 W	1916, Je	18 56.0 W	− 5.9
Eastport (*b*)	1910, Au	20 04.6 W	1916, Je	20 33.3 W	− 4.9
New Hampshire:					
Hanover (*a*)	1905, Se	12 48.4 W	1916, Jy	13 50.6 W	− 5.7
Rochester (*a*)	1910, Au	16 45.9 W	1916, Je	17 16.5 W	− 5.2
Chesterfield (*a*)	1890, Se	11 12.7 W	1916, Au	13 10.1 W	− 4.5
Massachusetts:					
Newburyport (*b*)	1905, Oc	13 22.0 W	1916, My	14 21.0 W	− 5.6
Boston (*a*)	1913, Je	13 47.4 W	1916, My	14 00.4 W	− 4.5
Provincetown (*c*)	1895, Jy	12 59.2 W	1916, My	14 42.0 W	− 4.9
Connecticut:					
New Haven (*a*)	1910, My	10 40.4 W	1916, Ap	11 21.6 W	− 7.0
New Haven (*b*)	1910, My	10 40.4 W	1916, Ap	11 06.6 W	− 4.4

[a] Observations by the Department of Terrestrial Magnetism, Carnegie Institution of Washington.

Comparison of declination results at repeat stations—Continued.

State and station	Former observations		Last observations		Average annual change
	Date	Declination	Date	Declination	
		° ′		° ′	′
Rhode Island:					
Providence (*a*)	1910, My	12 41.7 W	1916, My	13 14.4 W	− 5.4
Kingston (*a*)	1910, My	12 16.2 W	1916, My	12 41.8 W	− 4.3
New York:					
Dannemora (*b*)	1907, Se	8 14.8 W	1916, Au	9 34.8 W	− 9.0
Ithaca (*b*)	1909, Je	7 43.6 W	1916, Au	8 41.3 W	− 8.0
Maryland:					
Cheltenham Obs'y (*a*)	1914, year	5 59.8 W	1916, year	6 07.6 W	− 3.9
Oakland (*a*)	1910, Oc	3 56.8 W	1916, Ap	4 08.7 W	− 2.2
Virginia:					
Palmyra (*a*)	1901, Se	5 22.3 W	1916, Mh	6 27.8 W	− 4.5
Palmyra N. M. (*a*)	1901, Se	4 28.0 W	1916, Mh	5 36.2 W	− 4.7
Richmond (*a*)	1901, Au	3 45.0 W	1916, Ap	4 51.8 W	− 4.6
Emporia (*b*)	1897, My	3 29.2 W	1916, Ap	4 43.9 W	− 4.0
North Carolina:					
Halifax (*c*)	1906, Jy	2 19.7 W	1916, Ap	3 34.7 W	− 7.7
Chapel Hill (*b*)	1906, Au	1 54.0 W	1916, Ap	2 26.1 W	− 3.3
Salisbury (*b*)	1912, My	0 57.8 W	1916, Ap	0 57.4 W	+ 0.1
Morganton (*a*)	1906, Au	0 38.8 W	1916, My	1 11.3 W	− 3.3
West Virginia:					
Parkersburg (*a*)	1910, Oc	1 49.2 W	1916, Ap	2 02.2 W	− 2.4
Ohio:					
Cincinnati (*b*)	1907, Je	0 57.4 E	1916, Ap	0 41.1 E	− 1.8
Indiana:					
Indianapolis (*a*)	1909, Je	1 09.2 E	1916, No	0 57.5 E	− 1.6
Mississippi:					
Holly Springs (*a*)	1901, Fe, Mh	5 30.6 E	1916, My	5 45.2 E	+ 1.0
Louisiana:					
Tallulah (*b*)	1910, My	6 14.2 E	1916, My	6 26.8 E	+ 2.1
Ruston (*b*)	1910, My	6 55.8 E	1916, My	7 12.5 E	+ 2.8
Arkansas:					
Little Rock (*a*)	1912, Je	6 54.3 E	1916, Jy	7 02.5 E	+ 2.0
Malvern (*a*)	1912, No	6 22.2 E	1916, Je	6 27.0 E	+ 1.3
Rison (*a*)	1911, Mh	1 49.2 E	1916, Je	1 53.4 E	+ 0.8
Missouri:					
Bloomfield (*a*)	1908, Se	7 19.6 E	1916, Jy	7 23.0 E	+ 0.4
Kansas City (*a*)	1913, Oc	9 14.6 E	1916, Oc	9 14.6 E	0.0
Mexico (*a*)	1908, Jy	6 36.4 E	1916, Oc	6 33.0 E	− 0.4
Kansas:					
Winfield (*a*)	1911, Jy	9 38.8 E	1916, My	9 50.7 E	+ 2.5
Iowa:					
Oskaloosa (*a*)	1908, Au	7 56.4 E	1916, My	7 54.0 E	− 0.3
South Dakota:					
Huron (*a*)	1911, Au	11 34.8 E	1916, No	11 27.4 E	− 1.4
Yankton (*a*)	1912, Se	11 29.6 E	1916, My	11 17.8 E	− 3.2
North Dakota:					
Portal (*c*)	1906, Jy	17 41.5 E	1916, Je	17 43.6 E	+ 0.2
Montana:					
Sweetgrass (*a*)	1906, Jy	22 31.1 E	1916, Jy	22 41.2 E	+ 1.1
Browning (*a*)	1906, Au	20 46.4 E	1916, Jy	20 57.9 E	+ 1.2
Glendive (*c*)	1903, Jy	17 10.1 E	1916, Se	17 20.1 E	+ 1.0
Livingston (*a*)	1910, Jy	19 37.7 E	1916, Se	19 45.4 E	+ 1.2
Idaho:					
Pocatello (*a*)	1910, Jy	18 29.9 E	1916, Se	18 34.3 E	+ 0.7
Arizona:					
Tucson Obs'y (*a*)	1914, year	13 39.9 E	1916, year	13 44.6 E	+ 2.3
Ash Fork (*b*)	1908, Se	15 13.4 E	1916, My	15 00.8 E	− 1.6
Ash Fork (*b*)	1902, De	15 07.2 E	1916, My	15 34.4 E	+ 2.0
Holbrook (*b*)	1903, Mh	13 35.5 E	1916, My	14 22.3 E	− 1.0
California:					
Goat Island (*a*)	1912, My	18 02.7 E	1916, Au	18 18.0 E	+ 3.6
Alaska:					
Sitka Obs'y (*a*)	1914, year	30 22.9 E	1916, year	30 23.9 E	+ 0.5
Hawaii:					
Honolulu Obs'y (*a*)	1914, year	9 39.6 E	1916, year	9 43.8 E	+ 2.1
Porto Rico:					
Vieques Obs'y (*a*)	1914, year	3 00.4 W	1916, year	3 19.4 W	− 9.5
Ponce (*b*)	1911, Jy	2 03.0 W	1916, Se	2 49.0 W	− 8.9
San Juan South Base (*b*)	1911, Jy	2 17.6 W	1916, Se	3 07.7 W	− 9.7

OBSERVATIONS AT SEA.

Only such observations were made on board ship as were required for the determination of the deviations of ships' compasses for purposes of navigation.

INSTRUMENTAL CORRECTIONS.

Most of the instruments used in the field work have been compared with the observatory instruments at Cheltenham at the end of the year, the results in general differing but little from those obtained at the end of 1915.

Beginning with 1913 the results of horizontal intensity observations made by the Coast and Geodetic Survey have been reduced to the international standard of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. The published results of horizontal intensity determinations made before that year must be diminished by 0.001 H to reduce them to that standard.

The instrumental corrections indicated in the tables below have been applied.

Corrections to magnetometers.

Number	Pattern	Correction to east declination	Correction to H in parts of H
		′	
4	.....	0.0	−0.0024
17	C. & G. S.....	0.0	.0000
19	C. & G. S.....	0.0	.0000
20	C. & G. S.....	0.0	.0000
26	Wild-Edelmann.....	0.0	− .0010
29	C. & G. S.....	0.0	.0000
30	India Survey.....	0.0	.0000
31	India Survey.....	0.0	− .0007
36	India Survey.....	−0.4	.0000
37	India Survey.....	0.0	+ .0012
38	Carnegie Institution..	0.0	− .0007

Corrections to dip circles

Number	Pattern	Needles	Designation	Correction
15	Kew-Casella.....	1 and 2....	15.12	−1.0
33	L. C. Dover.....	1 and 2....	33.12	−3.4
36	Kew-Dover.....	1 and 2....	36.12	−0.8
56	Kew-Casella.....	1 and 3[a]...	56.13	−1.6
56	Kew-Casella.....	3 and 4....	56.34	−3.1
5678	Kew-Casella.....	1 and 2....	78.12	−1.5
5678	Kew-Casella.....	5 and 6....	78.56	−1.7

[a] The needle numbered 3 in the designation 56.13 was originally used with dip circle No. 18.

DIURNAL VARIATION CORRECTION.

Each value of the magnetic declination has been corrected for diurnal variation with the aid of the continuous observations at the nearest magnetic observatory, allowance being made for the change in diurnal range with change in magnetic latitude. No attempt has been made to correct the dip and intensity results for diurnal variation.

ARRANGEMENT OF TABLE.

The results presented are arranged by States alphabetically, and the results for each State are given in the order of increasing latitudes. The latitudes and longitudes are in most cases the results of solar observations made with the small theodolite which forms a part of the magnetometer. In default of observations, a chart or a topographic sheet of the United States Geological Survey, the geographic coordinates were scaled from the best available map, usually

a post-route map. In such cases only the nearest whole minute of latitude or longitude is given. The horizontal intensity is expressed in terms of the one hundred-thousandth part of a C. G. S. unit of intensity of magnetic force, termed a gamma and designated by the Greek letter γ.

In order to include the desired amount of information in the available space, the months have been abbreviated as follows:

January	Ja	May	My	September	Se
February	Fe	June	Je	October	Oc
March	Mh	July	Jy	November	No
April	Ap	August	Au	December	De

Where the number in the magnetometer column is in italics, the declination observations were made with a compass declinometer. The letter C in that column indicates that the declination was determined with the compass attachment of the dip circle.

The observer is indicated by the initials of his name. The names of the observers are as follows:

F. L. Adams	W. M. Hill	H. W. Pease
P. F. Bennedict	G. C. Jones	E. E. Reese
J. W. Green	H. E. McComb	S. G. Townshend, jr
H. R. Grummann	W. W. Merrymon	F. P. Ulrich
G. Hartnell	F. Neumann	

Magnetic observations on land.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
	° ′	° ′		East ° ′	° ′	γ			
ALASKA.									
Ketchikan	55 20.2	131 39.5	Ap 17, 18	29 16.3	74 08.8	15946	4	33.12	E.E.R.
Cob, Rocky Bay	56 01.9	132 35.6	Jy 18	29 29.4	.....	.....	C33	.....	H.R.G.
Lake Bay	56 02.0	132 55.3	Au 26	30 07.0	.....	.....	*742*	.....	E.E.R.
Do	56 02.0	132 55.3	Au 26	29 55.2	74 33.3	.....	C33	33.1	E.E.R.
Cop	56 16.6	132 59.6	Jy 24	29 51.6	.....	.....	C33	.....	E.E.R.
Sitka Obs'y	57 03.0	135 20.1	Year	30 24.0	74 26.0	15580	37	2EI	J.W.G.
Egg	60 23.1	145 44.4	Au 19	29 10.9	.....	.....	*8*	.....	G.C.J.
Beach	60 23.5	146 03.1	Au 31	28 41.8	.....	.....	*8*	.....	P.F.B.
Trade	60 29.4	145 52.7	Au 11	28 31.9	.....	.....	*8*	.....	G.C.J.
ARIZONA.									
Tucson Obs'y	32 14.8	110 50.1	Je 14–16	13 44.7	.....	27086	19	.....	F.N.
Do	32 14.8	110 50.1	Je 17	.....	59 24.9	.....	.....	56.13	F.N.
Do	32 14.8	110 50.1	Jy 6	.....	59 26.4	.....	.....	56.34	F.N.
Do	32 14.8	110 50.1	Year	13 44.6	59 26.4	27058	30	3EI	F.P.U.
Holbrook	34 55.1	110 10.1	My 20	14 22.3	62 46.3	25114	19	56.13	F.N.
Ash Fork, aux	35 14	112 30	My 23	15 34.4	62 40.4	24910	19	56.1	F.N.
Ash Fork	35 14.4	112 29.2	My 22	15 00.8	62 50.6	24941	19	56.13	F.N.
ARKANSAS.									
Rison, aux. 3	33 53	92 16	Je 17	7 02.9	63 42.7	25330	38	36.1	W.M.H.
Sparkman	33 54.0	92 52.2	Je 29, 30	7 27.1	64 37.7	24339	38	36.12	W.M.H.
Rison, aux. 1	33 56	92 10	Je 14	4 55.3	64 03.3	25094	38	36.1	W.M.H.
Star City	33 56.0	91 52.4	Je 24	6 47.2	64 37.0	24611	38	36.12	W.M.H.
Rison, aux. 5	33 57.9	92 19	Je 21	19 23.3	65 01.8	24781	38	36.1	W.M.H.
Rison, aux. 2	33 58.2	92 17	Je 16	21 30.3	74 02.1	18543	38	36.1	W.M.H.
Rison	33 58.3	92 12.0	Je 12	1 53.4	65 21.5	24636	38	36.12	W.M.H.
Rison, aux. A	33 58.3	92 12.0	Je 13	1 56.3	.....	.....	38	.....	W.M.H.
Rison, aux. 4	34 00	92 10	Je 19	7 06.7	65 04.8	23727	38	36.1	W.M.H.
Malvern	34 21.6	92 48.8	Je 27, 28	6 27.0	64 26.6	24832	38	36.12	W.M.H.
Malvern, aux. A	34 21.6	92 48.8	Je 28	6 28.9	.....	.....	38	.....	W.M.H.
Little Rock	34 47.0	92 17.9	Jy 5, 6	7 02.5	65 26.0	23764	38	36.12	W.M.H.
Des Arc	34 58.1	91 31.9	Jy 8	6 25.8	65 56.9	23478	38	36.12	W.M.H.
Piggott	36 22.5	90 12.2	Jy 12, 13	5 45.0	67 36.6	22131	38	36.12	W.M.H.

Magnetic observations on land—Continued.

CALIFORNIA.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
	° ′	° ′		East. ° ′	° ′	γ			
Mariposa	37 29	119 58	Au 17	17 48.6	62 14.4	24990	19	56.13	W.W.M.
Cooperstown	37 44.8	120 32.7	Au 22	17 34.8	62 29.8	24770	19	56.13	W.W.M.
Goat Island	37 48.8	122 21.7	Au 4, 5	18 18.0	62 04.4	25012	19	56.13	W.W.M.
Sonora	37 59.2	120 23.8	Au 25	18 13.3	62 42.4	24726	19	56.13	W.W.M.
Martinez	38 00.5	122 09.3	Au 10, 11	18 37.6	62 21.4	24964	19	56.13	W.W.M.
San Andreas	38 11.8	120 39.1	Au 29	17 49.2	63 14.6	24277	19	56.13	W.W.M.
Galt	38 14.8	121 16.6	Se 2	17 09.5	63 23.0	24212	19	56.13	W.W.M.
Jackson	38 21.0	120 46.2	Au 31	17 17.8	62 55.6	24762	19	56.13	W.W.M.
Downieville	39 34.9	120 50.0	Se 14	15 01.3	64 19.9	23811	19	56.13	W.W.M.
Quincy	39 57.6	120 58.2	Se 12	18 31.2	64 30.2	23370	19	56.13	W.W.M.
COLORADO.									
Ramah	39 07.4	104 09.8	My 9	14 42.4	67 40.8	22268	19	56.13	F.N.
Seibert	39 17.6	102 50.8	My 8	13 18.0	67 51.4	22152	19	56.13	F.N.
Littleton	39 37.0	105 01.2	My 10	14 54.4	67 43.0	22016	19	56.13	F.N.
Brighton	39 59.1	104 48.8	My 13	14 34.3	67 54.4	22068	19	56.13	F.N.
CONNECTICUT.									
New Haven, old	41 19.4	72 55.1	Ap 18	West 11 21.6	72 38.2	17490	20	15.12	F.L.A.
New Haven, new	41 19.4	72 55.1	Ap 18, 19	11 06.6	72 36.1	17511	20	15.12	F. L. A.
HAWAII.									
Honolulu Obs'y	21 19.2	158 03.8	Year	East 9 43.8	39 29.2	28957	36	4EI	W.W.M.
IDAHO.									
Albion	42 25.5	113 33.0	Au 30	19 02.6	67 57.6	21755	17	78.12	H.E.M.
Twin Falls, aux. 2	42 30.8	114 28.8	Se 4	20 25.7	68 14.8	21299	17	78.2	H.E.M.
Twin Falls	42 33.8	114 27.0	Se 2	20 19.6	67 37.7	22035	17	78.12	H.E.M.
Twin Falls, aux. A	42 33.8	114 27.0	Se 4	20 23.9	.....	.....	17	.....	H.E.M.
Twin Falls, aux. B	42 33.8	114 27.0	Se 4	20 51.9	.....	.....	17	.....	H.E.M.
Twin Falls, aux. C	42 33.8	114 27.0	Se 4	19 26.4	.....	.....	17	.....	H.E.M.
Twin Falls, aux. D	42 33.8	114 27.0	Se 4	20 16.3	.....	.....	17	.....	H.E.M.
Twin Falls, aux. 1	42 34.3	114 22.6	Se 4	19 29.0	68 21.2	21561	17	78.2	H.E.M.
Twin Falls, aux. 3	42 36.0	114 31.7	Se 4	17 49.9	68 00.6	21678	17	78.2	H.E.M.
Rupert	42 37.0	113 39.8	Au 28	18 06.0	68 31.5	21334	17	78.12	H.E.M.
Rupert, aux. A	42 37.0	113 39.8	Au 28	18 07.8	.....	.....	17	.....	H.E.M.
American Falls	42 48.4	112 51.7	Se 5	18 33.0	68 45.2	21034	17	78.12	H.E.M.
Pocatello	42 51.5	112 26.4	Se 7	18 34.3	68 57.4	20928	17	78.12	H.E.M.
Gooding	42 56.3	114 42.2	Au 26	18 57.5	67 57.6	21530	17	78.12	H.E.M.
Silver City	43 01.4	116 44.6	Au 23	20 28.2	68 17.7	21209	17	78.12	H.E.M.
Caldwell	43 40.6	116 40.1	Au 21	19 47.2	68 20.5	21130	17	78.12	H.E.M.
Rigby	43 40.8	111 53.9	Se 8	18 08.2	69 41.0	20435	17	78.12	H.E.M.
Rigby, aux. A	43 40.8	111 53.9	Se 8	18 09.7	.....	.....	17	.....	H.E.M.
Driggs	43 44.4	111 06.2	Se 12, 13	19 27.4	70 21.6	19815	17	78.12	H.E.M.
Rexburg	43 49	111 45.5	Se 11, 12	18 53.1	69 57.8	20197	17	78.12	H.E.M.
Emmet	43 52.4	116 30.2	Au 18	20 03.6	68 50.4	20959	17	78.12	H.E.M.
Smith's Ferry	44 18.2	116 04.5	Au 15	20 33.8	69 21.7	20531	17	78.12	H.E.M.
McCall	44 54.7	116 06.0	Au 14	21 11.2	69 41.0	20202	17	78.12	H.E.M.
Pollock	45 22.4	116 21.8	Au 11	20 55.0	70 05.6	19878	17	78.12	H.E.M.
Nezperce	46 14.6	116 14.2	Au 7	22 34.2	71 01.4	19145	17	78.12	H.E.M.
Orofino	46 28.9	116 14.5	Au 4	22 13.2	71 03.2	19111	17	78.12	H.E.M.
Moscow	46 43.6	117 00.9	Au 2	21 48.0	71 18.4	18845	17	78.12	H.E.M.
St. Maries	47 18.6	116 34.2	Jy 31	22 59.8	71 41.2	18610	17	78.12	H.E.M.
Wallace	47 28.5	115 55.6	Jy 28	22 38.9	71 51.4	18531	17	78.12	H.E.M.
Coeur d'Alene	47 40.7	116 46.8	Jy 26	22 45.6	71 53.6	18444	17	78.12	H.E.M.

Magnetic observations on land —Continued.

INDIANA.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
	° ′	° ′		East. ° ′	° ′	γ			
Indianapolis	39 48.0	86 11.9	No 15, 16	0 57.5	71 13.9	19193	38	36.12	W.M.H.

IOWA.

Keosauqua	40 43.8	91 56.9	My 1	6 48.7	71 09.6	19404	17	78.12	H.E.M.
Oskaloosa	41 18.2	92 38.9	My 3	7 54.0	71.59 2	18681	17	78.12	H.E.M.
Avoca	41 27.9	95 21.2	My 9	9 59.6	71 33.4	19184	17	78.12	H.E.M.
Earlham	41 29.4	94 07.6	My 5	7 11.3	71 38.8	18916	17	78.12	H.E.M.
Earlham, aux	41 29.4	94 07.6	My 5	7 08.6	.....	.....	17	.....	H.E.M.
Adair	41 30.5	94 37.8	My 8	8 41.4	71 43.2	19212	17	78.12	H.E.M.

KANSAS.

Columbus	37 10	94 51	My 1, 3	8 41.4	67 36.4	22342	19	56.13	F.N.
Winfield	37 14.7	96 59.0	My 5	9 50.7	67 24.2	22500	19	56.13	F.N.

KENTUCKY.

Spring Lick	37 26.6	86 34.0	Ap 28	3 56.6	69 00.2	21126	19	56.13	F.N.
Eastview	37 35.2	86 03.5	Ap 26	0 53.1	69 07.2	21001	19	56.13	F.N.
Shelbyville	38 13.5	85 12.8	Ap 22	0 36.8	69 57.4	20251	19	56.13	F.N.
Anchorage	38 15.7	85 32.2	Ap 19	1 50.6	70 02.7	20347	19	56.13	F.N.
Buckner	38 23.8	85 25.4	Ap 18	0 41.0	70 49.1	19470	19	56.13	F.N.
Pendleton	38 27.9	85 17.2	Ap 17	0 55.2	70 16.8	19862	19	56.13	F.N.

LOUISIANA.

Jena	31 40.9	92 08.5	My 27, 28	6 58.5	62 26.8	25605	38	36.12	W.M.H.
Jonesboro	32 14.6	92 43.0	Je 7, 8	7 13.6	62 52.5	25421	38	36.12	W.M.H.
Tallulah	32 25.1	91 12.0	My 24	6 26.8	63 20.2	25118	38	36.12	W.M.H.
Ruston, old station	32 32.6	92 37.4	My 31	7 22.6	63 09.7	25249	38	36.12	W.M.H.
Ruston, new station	32 32.7	92 37.4	Je 2, 3	7 12.5	63 14.6	25152	38	36.12	W.M.H.
Ruston, aux	32 32.7	92 37.4	Je 1	7 08.9	.....	.....	38	.....	W.M.H.

MAINE.

				West.					
Alfred, aux. 3	43 26	70 44	Je 14	15 02.2	73 54.8	16167	20	15.1	F.L.A.
Alfred	43 28.6	70 43.0	Je 13	16 42.4	73 28.8	16897	20	15.12	F.L.A.
Alfred, aux. A	43 28.6	70 43.0	Je 13	16 43.6	.. ....	.....	20	.....	F.L.A.
Alfred, aux. 4	43 29	70 38	Je 14	15 48.8	74 00.4	16254	20	15.1	F.L.A.
Alfred, aux. 2	43 30	70 47	Je 14	14 57.8	74 17.1	16235	20	15.1	F.L.A.
Alfred, aux. 1	43 32	70 43	Je 14	15 53.8	74 08.7	16093	20	15.1	F.L.A.
Wiscasset	44 00.3	69 39.6	Je 16	16 52.2	74 06.5	16157	20	15.12	F.L.A.
South Paris	44 12.8	70 30.5	Jy 15	16 34.4	74 35.2	15700	20	15.12	F.L.A.
Ellsworth	44 32.6	68 24.8	Je 21	18 08.1	74 34.8	15536	20	15.12	F.L.A.
Machias	44 42.7	67 27.5	Je 23	19 55.2	74 15.5	16034	20	15.12	F.L.A.
Skowhegan	44 46.4	69 42.6	Jy 13	17 36.2	74 57.2	15416	20	15.12	F.L.A.
Eastport	44 54.9	66 59.7	Je 24	20 33.3	74 14.8	15994	20	15.12	F.L.A.
Calais, aux. 4	45 07.4	67 18.4	Je 30	19 13.9	74 45.0	15301	20	15.1	F.L.A.
Calais, aux. 1	45 09.7	67 12.0	Je 29	19 40.6	74 55.6	15119	20	15.1	F.L.A.
Calais	45 10.9	67 16.9	Je 27	18 56.0	74 37.6	15606	20	15.12	F.L.A.
Dover	45 10.2	69 14.3	Jy 11	18 23.4	75 00.8	15310	20	15.12	F.L.A.
Calais, aux. 2	45 14.4	67 14.1	Je 29	19 46.4	74 45.8	15407	20	15.1	F.L.A.
Calais, aux. 3	45 15.2	67 20.8	Je 29	19 25.4	74 49.0	15324	20	15.1	F.L.A.
Millinocket	45 38.3	68 42.0	Jy 8, 10	19 28.2	75 04.8	15148	20	15.12	F.L.A.
Houlton	46 07.0	67 53	Jy 1	20 31.0	75 24.1	14837	20	15.12	F.L.A.
Van Buren	47 09.7	67 56.8	Jy 5	21 53.8	76 00.4	14358	20	15.12	F.L.A.
Fort Kent	47 15.2	68 35.8	Jy 6	21 30.0	76 14.7	14218	20	15.12	F.L.A.

Magnetic observations on land—Continued.

MARYLAND.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
	° ′	° ′		West. ° ′	° ′	γ			
Cheltenham Obs'y	38 44.0	76 50.5	Ja 5	6 06.4	.. ....	19364	19	.....	G.H.
Do	38 44.0	76 50.5	Ja 19–22	6 04.6	70 49.2	19358	38	36.12	G.H.
Do	38 44.0	76 50.5	No 6–9	6 08.2	.. ....	19271	20	.....	G.H.
Do	38 44.0	76 50.5	No-10, 11	. ....	.. ....	19293	19	.....	H.W.P.
Do	38 44.0	76 50.5	No 18, 20	6 08.8	.. ....	.....	19	.....	S.G.T.
Do	38 44.0	76 50.5	No 27	. ....	70 50.4	.....	..	15.12	S.G.T.
Do	38 44.0	76 50.5	De 1, 2	. ....	70 51.8	.....	..	56.13	S.G.T.
Do	38 44.0	76 50.5	De 2	. ....	70 53.5	.....	..	56.34	S.G.T.
Do	38 44.0	76 50.5	Year	6 07.6	70 49.9	19335	26	26EI	G.H.
Oakland	39 24.8	79 25.8	Ap 11	4 08.7	70 54.6	19305	19	56.13	F.N.

MASSACHUSETTS.

Fall River	41 41	71 06.3	My 18	13 21.8	72 58.0	17143	29	15.12	F.L.A.
Barnstable	41 42.6	70 17.8	My 22	14 10.9	72 53.7	17186	20	15.12	F.L.A.
Taunton	41 51.8	71 03.6	My 19, 20	13 25.4	72 59.2	17146	20	15.12	F.L.A.
Provincetown	42 03.2	70 11.4	My 25	14 42.0	73 00.9	17078	20	15.12	F.L.A.
Boston	42 20.2	71 00.7	My 26	14 00.4	73 04.6	17032	20	15.12	F.L.A.
Newburyport, new	42 47.3	70 47.6	Je 2	14 24.3	73 35.0	16599	20	15.12	F.L.A.
Newburyport, old	42 48.1	70 48.8	My 31	14 21.0	73 36.4	16552	20	15.1	F.L.A.

MISSISSIPPI.

				East.					
Belzoni	33 10.8	90 28	My 20, 22	6 05.8	64 14.2	24588	38	36.12	W.M.H.
Sumner	33 56.4	90 27.8	My 16, 17	5 49.0	65 09.3	24108	38	36.12	W.M.H.
Water Valley	34 09.6	89 36.0	My 13	5 42.7	65 38.4	23701	38	36.12	W.M.H.
Holly Springs	34 47.0	89 25.6	My 11	5 45.2	66 16.7	23332	38	36.12	W.M.H.

MISSOURI.

Kennett	36 13.6	90 03.8	Jy 15, 16	5 19.8	67 24.0	22478	38	36.12	W.M.H.
Bloomfield, aux. 9	36 40.0	89 57.8	Jy 28	5 58.4	67 34.4	22292	38	36.1	W.M.H.
Poplar Bluff	36 43.4	90 24.3	Jy 20, 21	5 48.4	67 45.2	22148	38	36.12	W.M.H.
Bloomfield, aux. 5	36 47.6	89 57.6	Jy 27	7 01.8	68 09.2	21935	38	36.1	W.M.H.
Bloomfield, aux. 1	36 51.2	89 56.0	Jy 25	7 28.4	68 15.4	21800	38	36.1	W.M.H.
Bloomfield, aux. 6	36 51.3	89 47.2	Jy 27	5 12.0	68 46.6	21507	38	36.1	W.M.H.
Bloomfield, aux. 3	36 51.7	89 51.4	Jy 25	6 16.1	68 42.4	21525	38	36.1	W.M.H.
Bloomfield, aux. A	36 53.0	89 55.9	Jy 24	7 24.0	.. ....	.....	38	.....	W.M.H.
Bloomfield	36 53.0	89 55.9	Jy 22, 24	7 23.0	68 15.7	21761	38	36.12	W.M.H.
Bloomfield, aux. 2	36 53.8	89 58.8	Jy 25	6 32.4	68 05.0	21893	38	36.1	W.M.H.
Bloomfield, aux. 7	36 55	89 47	Jy 27	5 08.7	68 43.6	21507	38	36.1	W.M.H.
Bloomfield, aux. 4	36 56.5	89 57.8	Jy 26	6 45.8	68 15.3	21826	38	36.1	W.M.H.
Bloomfield, aux. 8	36 59.8	90 00.9	Jy 28	5 40.0	68 04.2	21760	38	36.1	W.M.H.
Buffalo	37 38.4	93 05.2	Se 22, 23	7 11.9	68 16.4	21880	38	36.12	W.M.H.
Stockton	37 41.4	93 49	Se 26, 27	8 27.6	68 10.9	21881	38	36.1	W.M.H.
Hermitage	37 56.1	93 18.4	Se 19, 20	7 56.2	68 42.4	21334	38	36.12	W.M.H.
Potosi	37 56.4	90 47.6	Au 1	5 52.7	68 57.4	21186	38	36.12	W.M.H.
Linn Creek, aux. 8	37 58	92 46	Se 16	8 26.2	68 35.4	21722	38	36.1	W.M.H.
Linn Creek, aux. 5	37 59	92 39	Se 13	7 27.3	68 43.6	21555	38	36.1	W.M.H.
Linn Creek, aux. 4	38 02	92 42	Se 12	8 08.1	68 34.0	21569	38	36.1	W.M.H.
Linn Creek, aux. 6	38 04	92 49	Se 14	8 17.9	68 45.4	21497	38	36.1	W.M.H.
Linn Creek, aux. 3	38 04	92 44	Se 12	8 09.6	68 36.5	21678	38	36.1	W.M.H.
Linn Creek, aux. 1	38 04	92 45	Se 11	8 15.5	68 37.9	21640	38	36.1	W.M.H.
Linn Creek	38 04.3	92 44.4	Se 8, 9	8 24.6	68 37.6	21664	38	36.12	W.M.H.
Linn Creek, aux. 2	38 06	92 41	Se 11	7 15.0	69 02.2	21329	38	36.1	W.M.H.
Linn Creek, aux. 9	38 06	93 03	Se 18	7 57.8	68 54.8	21377	38	36.1	W.M.H.
Linn Creek, aux. 7	38 10	92 49	Se 15	8 20.1	68 41.6	21573	38	36.1	W.M.H.
Vienna	38 11	91 59.5	Au 15, 16	6 12.3	69 01.6	21158	38	36.12	W.M.H.
Tuscumbia	38 14.0	92 27.3	Se 4, 5	7 39.7	68 44.3	21572	38	36.12	W.M.H.
Warsaw	38 15	93 23	Oc 2	7 57.0	68 39.4	21430	38	36.12	W.M.H.
Versailles	38 26.7	92 52.6	Au 30	7 18.2	69 15.2	21094	38	36.12	W.M.H.
Union	38 27.4	91 00.6	Au 10, 11	5 27.0	69 16.7	21039	38	36.12	W.M.H.
Linn	38 28.6	91 50.5	Au 19	6 53.2	69 12.8	21012	38	36.12	W.M.H.
Jefferson City	38 33.6	92 10.8	Au 23, 24	7 18.4	69 16.0	20991	38	36.12	W.M.H.

Magnetic observations on land—Continued.

MISSOURI—Continued.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
	° ′	° ′		East. ° ′	° ′	γ			
California	38 37.4	92 33.5	Au 27	6 44.0	69 23.8	20852	38	36.1	W.M.H.
University City	38 38.6	90 17.8	Au 7, 8	5 02.2	69 56.6	20454	38	36.12	W.M.H.
Warrenton	38 48.6	91 08.5	No 9, 10	5 34.6	69 33.4	20771	38	36.12	W.M.H.
Fulton	38 51	91 57	No 1, 2	6 43.3	69 33.4	20751	38	36.12	W.M.H.
Columbia	38 56.5	92 19.7	Oc 25, 26	6 28.7	69 31.2	20874	38	36.12	W.M.H.
Boonville	38 58.1	92 45.7	Oc 6, 7	7 14.5	69 46.8	20797	38	36.12	W.M.H.
Troy	38 58.2	90 59	Ap 12, 13	5 31.4	69 38.1	20724	17	78.12	H.E.M.
Montgomery City	38 58.4	91 30.1	No 6, 7	6 06.4	69 54.6	20625	38	36.12	W.M.H.
Kansas City	39 03	94 31	Oc 13	9 14.6	69 23.8	21116	38	36.12	W.M.H.
Kansas City, aux. A	39 03	94 31	Oc 14	9 18.2	.. ....	.....	38	.....	W.M.H.
Marshall	39 05.7	93 11.1	Oc 10, 11	7 52.2	69 58.7	20588	38	36.12	W.M.H.
Mexico	39 10.3	91 52.0	Oc 28	6 33.0	69 52.6	20713	38	36.12	W.M.H.
Mexico, aux	39 10.3	91 52.0	Oc 30	6 35.6	.. ....	.....	38	.....	W.M.H.
Carrollton	39 21.2	93 31.2	Oc 17, 18	7 27.2	69 50.0	20642	38	36.12	W.M.H.
Huntsville	39 26.2	92 32.6	Oc 21, 23	6 38.1	69 54.0	20482	38	36.12	W.M.H.
Paris	39 29	92 00	Ap 18, 19	7 14.4	70 10.4	20277	17	78.12	H.E.M.
New London	39 34.4	91 24.6	Ap 15, 17	5 56.1	70 18.4	20110	17	78.12	H.E.M.
Shelbyville	39 48.8	92 03.2	Ap 22	6 39.8	70 32.4	19966	17	78.12	H.E.M.
Monticello	40 07.1	91 42.6	Ap 24	6 46.7	70 39.8	19900	17	78.12	H.E.M.
Kahoka	40 25.4	91 43	Ap 27	6 10.2	71 04.5	19606	17	78.12	H.E.M.
Memphis	40 27.6	92 10.3	Ap 28	6 23.9	70 40.6	20018	17	78.12	H.E.M.

MONTANA.

Yellowstone	44 39.5	111 06.0	Se 14	19 25.4	70 35.5	19700	17	78.12	H.E.M.
Virginia City	45 19.5	111 56.8	Se 21	19 45.7	71 09.8	19264	17	78.12	H.E.M.
Columbus	45 39.1	109 18.1	Se 25	19 58.6	72 04.8	18570	17	78.12	H.E.M.
Livingston	45 39.7	110 36.2	Se 18	19 45.4	71 46.8	18722	17	78.12	H.E.M.
Ekalaka	45 54.2	104 33.5	Oc 11	16 54.5	73 29.2	17350	17	78.12	H.E.M.
Whitehall	45 53.4	112 05.6	Se 19	20 09.7	71 36.8	18754	17	78.12	H.E.M.
Whitehall, aux. A	45 53.4	112 05.6	Se 19	20 12.6	.. ....	.....	17	.....	H.E.M.
Baker, aux. 2	46 19.7	104 15.8	Oc 10	16 14.0	73 57.0	16936	17	78.2	H.E.M.
Baker, aux. 3	46 21.8	104 21.2	Oc 10	16 21.2	73 57.4	16973	17	78.2	H.E.M.
Baker	46 22.0	104 17.1	Oc 9	16 14.0	73 58.8	16885	17	78.12	H.E.M.
Baker, aux. A	46 22.0	104 17.1	Oc 9	16 20.0	.. ....	.....	17	.....	H.E.M.
Baker, aux. 1	46 24.9	104 15.8	Oc 10	16 03.2	74 07.8	16771	17	78.2	H.E.M.
Wibaux	47 00.1	104 11.7	Oc 5	17 00.3	74 20.8	16596	17	78.12	H.E.M.
Glendive	47 06.8	104 41.6	Se 28	17 20.1	74 22.2	16530	17	78.12	H.E.M.
Sidney	47 43.1	104 11.3	Se 29, 30	17 36.0	74 58.6	15978	17	78.12	H.E.M.
Libby	48 22	115 32.3	Jy 22	23 33.0	72 38.1	17867	17	78.12	H.E.M.
Browning, aux. 7	48 30.8	113 00.7	Jy 20	21 06.8	73 17.0	17432	17	78.2	H.E.M.
Browning, aux. 8	48 32.9	113 00.4	Jy 20	21 06.4	.. ....	.....	17	....	H.E.M.
Browning, aux. 1	48 33.5	113 06.2	Jy 19	20 46.8	73 20.5	17502	17	78.2	H.E.M.
Browning, aux. 2	48 33.5	113 03.8	Jy 19	20 48.4	.. ....	.....	17	....	H.E.M.
Browning, aux. 5	48 33.7	112 56.2	Jy 20	20 41.2	73 17.9	17456	17	78.2	H.E.M.
Browning, aux. 6	48 33.7	112 58.8	Jy 20	20 52.8	.. ....	.....	17	....	H.E.M.
Browning	48 34.1	113 02.4	Jy 19	20 57.9	73 14.2	17590	17	78.12	H.E.M.
Browning, aux. A	48 34.1	113 02.4	Jy 19	20 56.3	.. ....	.....	17	.....	H.E.M.
Browning, aux. B	48 34.1	113 02.4	Jy 19	20 57.4	.. ....	.....	17	.....	H.E.M.
Browning, aux. 4	48 35.7	112 59.6	Jy 20	20 44.7	.. ....	.....	17	.....	H.E.M.
Browning, aux. 3	48 37.4	112 59.6	Jy 20	20 42.3	73 13.3	17706	17	78.2	H.E.M.
Plentywood	48 47.8	104 32.9	Je 8	18 25.3	75 38.0	15394	17	78.12	H.E.M.
Sweetgrass	48 59.8	111 58.0	Jy 4	22 41.2	73 57.0	16789	17	78.12 78.56	H.E.M.
Monument 566	49 00.0	104 32.6	Je 7	18 14.2	75 45.4	15246	17	78.12	H.E.M.
Monument 542, aux	49 00.0	105 17.8	Je 10	18 47.8	.. ....	.....	17	.....	H.E.M.
Monument 542	49 00.0	105 17.8	Je 10	18 46.6	75 34.3	15390	17	78.12	H.E.M.
Monument 527	49 00.0	105 46.7	Je 12	19 16.7	75 29.8	15407	17	78.12	H.E.M.
Monument 509	49 00.0	106 21.7	Je 13	19 39.8	75 26.8	15508	17	78.12	H.E.M.
Monument 509, aux	49 00.0	106 21.7	Je 13	19 38.4	.. ....	.....	17	.....	H.E.M.
Monument 496	49 00.0	106 47.6	Je 15	20 00.4	75 12.8	15812	17	78.12	H.E.M.
Monument 481	49 00.0	107 19.3	Je 16	20 22.2	75 21.5	15506	17	78.12	H.E.M.
Monument 461	49 00.0	107 54.7	Je 19	20 47.4	75 06.3	15779	17	78.12	H.E.M.
Monument 443	49 00.0	108 30.1	Je 20	20 36.0	74 57.8	15948	17	78.12	H.E.M.
Monument 443, aux	49 00.0	108 30.1	Je 20	20 37.5	.. ....	.....	17	.....	H.E.M.
Monument 420	49 00.0	109 12.6	Je 23, 24	20 42.6	74 57.1	16020	17	78.12	H.E.M.
Monument 420, aux	49 00.0	109 12.6	Je 24	20 41.1	.. ....	.....	17	.....	H.E.M.
Monument 403	49 00.0	109 42.8	Je 25	21 11.6	74 39.5	16295	17	78.12	H.E.M.

Magnetic observations on land—Continued.

MONTANA—Continued.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
	° ′	° ′		*East.* ° ′	° ′	γ			
Monument 389	49 00.0	110 12.5	Je 26, 27	22 21.3	74 36.8	16206	17	78.12	H.E.M.
Monument 365	48 59.9	110 58.5	Je 29	21 49.0	74 34.5	16216	17	78.12	H.E.M.
Monument 350	48 59.8	111 28.8	Jy 1	22 40.9	74 21.8	16520	17	78.12	H.E.M.
Monument 315	48 59.9	112 33.8	Jy 6	21 40.8	74 23.7	16276	17	78.12	H.E.M.
Monument 315, aux	48 59.9	112 33.8	Jy 6	21 39.0	.. ....	.....	17	.....	H.E.M.
Monument 314, aux	48 59.9	112 35.6	Jy 7	21 38.2	.. ....	.....	17	.....	H.E.M.
Monument 313, aux	48 59.9	112 37.4	Jy 7	21 29.4	.. ....	.....	17	.....	H.E.M.
Monument 300–1, aux	49 00.0	113 02.9	Jy 7	20 36.9	.. ....	.....	17	.....	H.E.M.
Monument 295	48 59.9	113 13.4	Jy 8	24 23.8	74 23.2	16506	17	78.12	H.E.M.
Monument 295, aux	48 59.9	113 13.4	Jy 8	24 24.3	.. ....	.....	17	.....	H.E.M.
Monument 294, aux	48 59.9	113 15.6	Jy 10	24 25.7	.. ....	16558	17	.....	H.E.M.
Monument 281	49 00.0	113 40.8	Jy 12	24 18.8	73 51.9	16950	17	78.12	H.E.M.
Monument 276	48 59.9	113 54.3	Jy 14	24 19.2	73 40.7	17108	17	78.12	H.E.M.
Monument 276, aux	48 59.9	113 54.3	Jy 14	24 19.6	.. ....	.....	17	.....	H.E.M.

NEW HAMPSHIRE.

				West					
Chesterfield	42 53.2	72 28.3	Au 2	13 00.5	73 46.6	16571	20	15.12	F.L.A.
Chesterfield, aux. 1	42 54.0	72 24	Au 3	13 10.1	73 45.7	16542	20	15.1	F.L.A.
Rochester, aux. 3	43 15	70 58	Je 7	14 41.1	73 53.0	16386	20	15.1	F.L.A.
Rochester, aux. A	43 18	70 58	Je 12	15 35.6	.. ....	16151	20	.....	F.L.A.
Rochester, aux. B	43 18	70 58	Je 12	15 27.3	.. ....	16111	20	.....	F.L.A.
Rochester, aux. 2	43 18	71 03	Je 6	14 35.3	73 57.4	16406	20	15.1	F.L.A.
Rochester, aux. 4	43 18	70 56	Je 7	14 43.7	73 50.1	16445	20	15.1	F.L.A.
Rochester	43 18.2	70 57.8	Je 5	17 16.5	73 59.8	16422	20	15.12	F.L.A.
Rochester, aux. 1	43 22	70 57.7	Je 5	15 21.5	73 50.2	16453	20	15.1	F.L.A.
Hanover	43 43.0	72 16.8	Jy 31	13 50.6	74 23.6	16012	20	15.12	F.L.A.
Orford	43 53.7	72 09.0	Jy 28, 29	14 22.2	74 29.8	15882	20	15.12	F.L.A.
Orford, aux	43 54	72 08.5	Jy 29	14 17.6	74 30.8	15917	20	15.1	F.L.A.
Lancaster	44 29.2	71 33.5	Jy 17	14 07.4	74 02.0	16611	20	15.12	F.L.A.

NEW MEXICO.

				East					
Gallup	35 31.9	108 45.3	My 19	14 30.7	63 21.5	24832	19	56.13	F.N.
Taos	36 24.4	105 33.8	My 17	13 47.4	64 29.3	24262	19	56.13	F.N.

NEW YORK.

				West					
Ithaca, old	42 26.6	76 28.6	Au 24	8 41.3	73 48.3	16546	20	15.12	F.L.A.
Ithaca, new	42 27	76 28	Au 28	8 21.6	73 48.0	16562	20	15.12	F.L.A.
Ovid	42 40	76 49.4	Au 25	8 28.6	73 30.1	17025	20	15.12	F.L.A.
De Ruyter	42 45.2	75 54.0	Au 22	10 32.1	74 04.6	16532	20	15.12	F.L.A.
De Ruyter, aux. A	42 45.2	75 54.0	Au 22	10 21.1	.. ....	.....	20	.....	F.L.A.
Wampsville	43 04.5	75 42.6	Au 21	9 38.4	74 09.5	16407	20	15.12	F.L.A.
Faust, aux. 1	44 11.8	74 28.4	Au 17	14 02.9	75 00.3	15559	20	15.1	F.L.A.
Faust, aux. 3	44 14	74 34.0	Au 17	13 08.9	75 05.6	15630	20	15.1	F.L.A.
Faust	44 14.5	74 29.5	Au 16	14 27.4	75 06.9	15241	20	15.12	F.L.A.
Faust, aux. 2	44 15	74 24.3	Au 17	13 21.0	74 46.1	15845	20	15.1	F.L.A.
Faust, aux. 4	44 19	74 31.8	Au 18	12 16.6	74 48.3	15599	20	15.1	F.L.A.
Port Kent	44 31.4	73 24.2	Au 10	13 22.0	74 42.7	15840	20	15.12	F.L.A.
Inman, aux. 3	44 31.5	74 06	Au 16	12 42.8	74 38.1	15841	20	15.1	F.L.A.
Inman, aux. 1	44 33.0	74 03.5	Au 15	8 05.0	74 14.3	16367	20	15.1	F.L.A.
Inman	44 34.3	74 05.8	Au 14, 15	10 08.0	74 43.8	15842	20	15.12	F.L.A.
Inman, aux. A	44 34.3	74 05.8	Au 15	10 07.6	.. ....	.....	20	.....	F.L.A.
Inman, aux. 2	44 36.0	74 09.0	Au 15	11 56.7	74 34.7	15853	20	15.1	F.L.A.
Dannemora, aux. 3	44 39	73 45	Au 12	13 36.0	74 56.1	15398	20	15.1	F.L.A.
Dannemora, aux. 2	44 41.8	73 38	Au 12	13 44.2	74 43.3	15860	20	15.1	F.L.A.
Dannemora	44 43.4	73 43.6	Au 11	9 34.8	76 06.0	14682	20	15.12	F.L.A.
Dannemora, aux. A	44 43.4	73 43.6	Au 11	11 08.6	.. ....	.....	20	.....	F.L.A.
Dannemora, aux. 1	44 45	73 37	Au 12	13 16.0	74 43.6	15838	20	15.1	F.L.A.
Dannemora, aux. 4	44 45.6	73 46.1	Au 14	13 53.3	74 20.2	16075	20	15.1	F.L.A.

Magnetic observations on land—Continued.

NORTH CAROLINA.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
	° ′	° ′		*West.* ° ′	° ′	γ			
Salisbury, old	35 40.0	80 30.2	Ap 30	0 57.4	67 54.4	21483	38	36.12	W.M.H.
Salisbury, aux	35 40.0	80 30.2	My 1	1 00.1	.. ....	.....	38	.....	W.M.H.
Salisbury, new	35 41	80 30.6	My 2, 3	1 53.4	67 41.8	21732	38	36.12	W.M.H.
Morganton, new	35 43.0	81 42.6	My 8	1 03.6	67 42.5	21948	38	36.12	W.M.H.
Morganton, old	35 43.9	81 42.0	My 5, 6, 7	1 11.3	67 41.6	21826	38	36.12	W.M.H.
Morganton, aux	35 43.9	81 42.0	My 6	0 56.8	67 43.1	.....	38	36.1	W.M.H.
Chapel Hill, old	35 54.2	79 03.9	Ap 25, 26	1 39.0	68 09.8	21121	38	36.12	W.M.H.
Chapel Hill, new	35 54.2	79 03.9	Ap 27	2 26.1	68 32.4	21009	38	36.12	W.M.H.
Halifax, new	36 19.3	77 34.4	Ap 21, 22	3 34.7	68 38.2	20864	38	36.12	W.M.H.
Halifax, old	36 19.6	77 34.1	Ap 20	3 40.4	68 30.5	20768	38	36.12	W.M.H.

NORTH DAKOTA.

				East					
Fort Yates	46 06.2	100 36.9	Oc 24	14 06.2	74 13.7	16749	17	78.12	H.E.M.
Bowman	46 11.7	103 22.9	Oc 13	16 22.7	73 52.4	16984	17	78.12	H.E.M.
Shields	46 14.8	101 06.6	Oc 21	14 55.4	74 21.3	16658	17	78.12	H.E.M.
Mott	46 22	102 17.8	Oc 16, 17	16 32.6	74 16.8	16779	17	78.12	H.E.M.
Leith	46 22.3	101 40.3	Oc 20	14 39.4	74 26.4	16531	17	78.12	H.E.M.
Amidon	46 29.9	103 20.9	Oc 14	16 23.4	74 10.8	16798	17	78.12	H.E.M.
Beach	46 56.3	104 00.5	Oc 6	16 59.3	74 22.6	16580	17	78.12	H.E.M.
Cavalier	48 46	97 36.9	My 16, 17	11 59.8	77 09.8	14008	17	78.12	H.E.M.
Bowbells	48 48.6	102 15.0	My 31	16 40.8	76 09.9	14829	17	78.12	H.E.M.
Monument 583	49 00.0	104 02.9	Je 5	17 45.0	75 58.4	14994	17	78.12	H.E.M.
Monument 583, aux	49 00.0	104 02.8	Je 5	17 45.9	.. ....	.....	17	.....	H.E.M.
Monument 601	49 00.0	103 29.5	Je 3	17 59.4	76 03.1	14962	17	78.12	H.E.M.
Monument 613	49 00.0	103 05.6	Je 2	17 12.7	76 12.0	14810	17	78.12	H.E.M.
Monument 629	49 00.0	102 35.6	Je 1	17 43.6	76 09.8	14904	17	78.12	H.E.M.
Monument 641	49 00.0	102 12.5	My 30	16 47.4	76 19.8	14777	17	78.12	H.E.M.
Monument 661	49 00.0	101 37.0	My 28	15 56.4	76 29.2	14609	17	78.12	H.E.M.
Monument 661, aux	49 00.0	101 37.0	My 28	15 58.6	.. ....	.....	17	.....	H.E.M.
Monument 680	49 00.0	101 02.2	My 27	15 27.7	76 39.2	14434	17	78.12	H.E.M.
Monument 696	49 00.0	100 31.6	My 25	16 13.6	76 43.0	14427	17	78.12	H.E.M.
Monument 712	49 00.0	100 01.6	My 23	14 24.8	76 51.8	14355	17	78.12	H.E.M.
Monument 733	49 00.0	99 22	My 20	13 51.5	76 58.4	14146	17	78.12	H.E.M.
Monument 755	49 00.0	98 53.5	My 18, 20	13 45.6	77 02.7	14115	17	78.12	H.E.M.
Monument 776	49 00.0	98 27.0	My 19	13 25.9	76 53.8	14251	17	78.12	H.E.M.

OHIO.

Cincinnati	39 08.2	84 31.0	Ap 15	1 00.0	70 47.8	19616	19	56.13	F.N.
Cincinnati, aux	39 08.0	84 31.0	Ap 14	0 41.1	.. ....	.....	19	.....	F.N.

PORTO RICO.

				West					
Ponce	18 01.5	66 39.0	Se 22	2 49.0	50 26.0	28900	20	15.12	H.W.P.
Porto Rico Obs'y	18 08.8	65 26.9	Se 11–13	3 23.6	50 57.3	28117	20	15.12	F.L.A.
Do	18 08.8	65 26.9	Year	3 19.4	50 56.7	28154	31	1E1	H.W.P.
Mayaguez	18 13.8	67 10.4	Se 19	0 57.4	50 23.8	28635	20	15.12	H.W.P.
San Juan south base	18 27.2	66 08.3	Se 25	3 07.7	51 42.2	28138	20	15.12	H.W.P.

RHODE ISLAND.

Kingston	41 28.8	71 31.4	Ap 20	12 41.8	72 50.2	17384	29	15.12	F.L.A.
Providence	41 45.5	71 27.9	My 16	13 14.4	72 53.8	17255	29	15.12	F.L.A.

Magnetic observations on land—Continued.

SOUTH DAKOTA.

Station	Latitude	Longitude	Date	Declination	Dip	Horizontal intensity	Instruments		Observer
							M	D.C.	
	° ′	° ′		*East.* ° ′	° ′	γ			
Yankton	42 52.7	97 23.2	My 12	11 17.8	73 05.8	17744	17	78.12	H.E.M.
Huron	44 22	98 13	No 3	11 27.4	73 17.1	17707	17	78.12	H.E.M.
Huron	44 22	98 13	No 3	.. ....	73 18.2	.....	..	78.56	H.E.M.
Dupree	45 03.0	101 37.6	No 1	14 11.8	73 17.2	17541	17	78.12	H.E.M.
La Plant	45 09.8	100 37.4	Oc 31	14 24.2	73 37.0	17438	17	78.12	H.E.M.
Timber Lake	45 26	101 03.0	Oc 28	14 39.6	73 39.6	17220	17	78.12	H.E.M.
Mound City	45 45.2	100 04.7	Oc 26	13 49.8	74 12.0	16667	17	78.12	H.E.M.
McLaughlin	45 49.9	100 49.6	Oc 23	14 39.2	74 04.6	16854	17	78.12	H.E.M.

VERMONT.

				West					
Chelsea	43 59.3	72 27.8	Jy 27	14 24.8	74 29.8	15946	20	15.12	F.L.A.
Richford, aux. 5	44 53.0	72 36.1	Jy 25	16 00.1	74 58.0	15755	20	15.1	F.L.A.
Newport	44 56.1	72 11.8	Jy 19	15 47.0	75 57.5	15456	20	15.12	F.L.A.
Richford, aux. 4	44 58.2	72 40.8	Jy 24	20 11.3	74 24.4	16168	20	15.1	F.L.A.
Richford, aux. 1	44 58.3	72 39.4	Jy 24	16 02.6	75 03.6	15417	20	15.1	F.L.A.
Richford, aux. 6	44 59.2	72 48.3	Jy 25	10 46.1	76 20.2	13961	20	15.1	F.L.A.
Richford	44 59.6	72 39.7	Jy 21	17 57.5	74 31.3	15980	20	15.12	F.L.A.
Richford, aux. 2	45 00.8	72 39.1	Jy 24	17 41.4	75 02.8	15702	20	15.1	F.L.A.
Richford, aux. 3	45 00.8	72 38.2	Jy 24	15 47.5	74 47.3	15677	20	15.1	F.L.A.
Richford, aux. 7	45 00.8	72 36.8	Jy 25	15 34.5	74 56.1	15492	20	15.1	F.L.A.

VIRGINIA.

Emporia, old	36 40.7	77 32	Ap 15, 17	4 27.8	68 50.2	20731	38	36.12	W.M.H.
Emporia, new	36 40.7	77 32	Ap 18	4 43.9	68 56.6	20598	38	36.12	W.M.H.
Richmond, old	37 32.7	77 28.8	Ap 13, 14	4 49.6	69 36.3	20212	38	36.12	W.M.H.
Richmond, new	37 32.7	77 28.8	Ap 12, 13	4 48.7	69 41.8	20178	38	36.12	W.M.H.
Palmyra, aux. 1	37 48.0	78 21.1	Ap 7	3 55.7	70 07.0	19844	38	36.1	W.M.H.
Palmyra, aux. 3	37 49	78 13	Ap 5	4 54.1	69 33.5	20314	38	36.1	W.M.H.
Palmyra, 1901, N M	37 51.7	78 16.2	Mh 24, 25	5 36.2	69 42.8	20331	38	36.12	W.M.H.
Palmyra, aux. B	37 51.7	78 16.2	Mh 27, 28	5 15.5	69 46.6	20342	38	36.1	W.M.H.
Palmyra, old, aux. C	37 51.7	78 16.2	Mh 28	6 27.8	.. ....	.....	38	.....	W.M.H.
Palmyra, new	37 52.0	78 15.7	Mh 30, 31	5 44.2	69 39.5	20330	38	36.12	W.M.H.
Palmyra, aux. A	37 52.0	78 15.7	Ap 1, 10	5 58.6	.. ....	.....	38	.....	W.M.H.
Palmyra, aux. 2	37 53.1	78 15.0	Ap 4	5 25.2	69 29.9	20474	38	36.1	W.M.H.

WASHINGTON.

				East					
Newport	48 10.4	117 02.5	Jy 24	24 06.6	72 10.6	18335	17	78.12	H.E.M.

WEST VIRGINIA.

				West					
Parkersburg	39 16.1	81 33.6	Ap 12	2 02.2	71 04.2	19330	19	56.13	F.N.

WYOMING.

				East					
Fort Yellowstone	44 58.9	110 41.4	Se 16	19 39.4	71 05.2	19277	17	78.12	H.E.M.

DESCRIPTIONS OF STATIONS.

Magnetic observers are instructed to mark each station (except auxiliary stations for development of local disturbance) in as permanent a manner as possible, either with a stone, a draintile filled with cement, or a post of some durable wood, so that it may be available for future occupation. They are also required to furnish a sufficiently detailed description to locate the station even if the marking should be destroyed, and to determine the bearings of two or three prominent objects in addition to the one used as a reference mark in the azimuth and declination observations. The information is given in abridged form on the following pages. Further details can usually be obtained upon application to the Superintendent of the Coast and Geodetic Survey.

The usual method of marking a station is by a stone post about 30 inches long and 6 inches square, set so as to project 2 or 3 inches above the ground. In the center of the top is set a circular bronze plate 3½ inches in diameter.

When the local authorities desire it and are willing to bear the expense, a second stone is set to mark the true meridian.

The descriptions of stations are arranged alphabetically by States and by names of stations.

ALASKA.

Ketchikan.—The station of 1915 was reoccupied. It is on the northeastern end of Pennock Island, in front and a little north of the northern Indian burial ground. It is about 60 yards from the end of the island, 5 yards from high-water mark, and 50 yards east of a large spruce tree which is blazed on its northern face about 8 feet above the ground. The station is marked by a cement block about 1 foot square projecting about 3 inches above the surface and lettered U. S. C. & G. S., 1907. The following true bearings were determined in 1907 and 1916:

	° ′
Flagpole on schoolhouse cupola (mark)	45 35.1 east of north
Cupola of Revilla Hotel	55 15.3 east of north
Stack rear of Heckman Wharf	62 18.9 east of north
Left wireless tower	44 15.8 west of north

ARIZONA.

Ash Fork, Yavapai County.—Observations were made a few hundred feet southwest of the probable location of the 1908 station. It is 20 feet south of a blazed tree and about 775 feet northwest of a railroad grade crossing. The railroad crossing sign bears S. 28° 56′ E. from the station. The mark is a bowlder about 1 foot square at the top and with a hole drilled near its center. The following true bearings were determined:

	° ′
Flagpole on schoolhouse (mark)	42 25.5 east of south
Apex of water tank east of town	74 42.7 east of south
North side of water tank north of depot	66 09.8 east of south
Flag pole on Escalante Hotel	60 18.1 east of south
Apex of water tank southwest of town	45 56.2 east of south

Auxiliary observations were made in the vicinity of the 1902 station which was in an open space southeast of town, on the west building line of Second Street, and 113.5 feet south of Mr. Foley's house.

Holbrook, Navajo County.—The station of 1903 was found to be of no further use for magnetic observations. A new station was established about 300 feet northeast of the old station, between the public school and the Brunswick Hotel. It is exactly in line with the row of telephone poles 175 feet west of the hotel fence and also in line with the south side of the main hotel building. It is 54 feet from the south tree of two northeast of the station and 48.4 feet from the first telephone pole south of it. The station is marked by a sandstone post set a few inches above ground. The following true bearings were determined:

	° ′
East corner of chimney on house one-fourth mile distant (mark)	39 39.2 east of north
Point on ledge of rock 3 miles distant	37 50.5 west of south
Upper point of east gable of schoolhouse	87 11.0 west of north
East gable of Standard Oil Co.'s warehouse	52 13.1 west of north
Upper southwest corner of building 200 yards distant	70 57.2 east of south

ARKANSAS.

Des Arc, Prairie County.—The station is in the northwestern part of the school ground, about one-fourth mile northwest from the town's center. It is 155.6 feet east from the fence across the road to the west and 165.3 feet northwest from the northwest corner of the schoolhouse. It is marked by a limestone post 6 by 5 by 30 inches, with a bronze disk set in the top projecting 5 inches above the ground. The following true bearings were determined:

	° ′
Lower southwest corner of schoolhouse above the foundation (mark)	34 18.3 east of south
Top of courthouse cupola	82 22.3 east of south
Top of water tower at cotton oil mill	79 22.9 west of south

Little Rock, Pulaski County.—The station of 1912 was reoccupied. It is on the parade ground of Fort Logan H. Roots, about 3 miles northwest of Little Rock. It is about 700 feet southwest of the west end of the barracks and about 125 feet due east of the drive. It is marked by a gray limestone post 7 by 7 by 36 inches, sunk flush with the surface of the ground and lettered U. S. C. & G. S. This stone marks the north end of a meridian line established in 1901. The south end is marked by a similar stone set 444.5 feet distant. The following true bearings were determined:

	° ′
Tip of tower on Maddox Female Academy (mark)	4 29.5 east of south
Water tank on grounds	47 20.7 east of north
Water tank across river	3 31.8 west of south

Malvern, Hot Spring County.—The station of 1912 was reoccupied. It is about 1 mile south of the town, on the grounds of Mr. MacHenry on Main Street, 122 feet east of the west iron fence inclosing the yard, 74.5 feet north of the concrete walk leading from the front gate to the house, and is 21 feet east of a telephone pole. The station is marked by a stone post 8 inches square, set so as to have 2 inches projecting above the surface of the ground. The following true bearings were determined:

	° ′
West gable end of house (mark)	12 25.3 east of north
Southeast edge of house, 845 Main Street	9 34.7 west of south
East gable end of green house on Main Street	81 40.5 west of north

Auxiliary observations were made 200 feet south of the primary station.

Piggott, Clay County.—The station is in the northwest corner of the school ground, about 1 mile west from the center of the town and about 235 feet west from the schoolhouse. It is 107 feet south from the north boundary fence of the grounds and 93 feet east from the west boundary fence. It is marked by a limestone post 6 by 5 by 33 inches, with a bronze disk set in the top, projecting 7 inches above the ground. The following true bearings were determined:

	° ′
Lower southwest corner of schoolhouse (mark)	71 13.2 east of south
Top of schoolhouse cupola	80 31.4 east of south
Lower northeast corner of schoolhouse	88 01.2 east of south
West gable point of Pfeifer house	30 53.9 east of north

Rison, Cleveland County.—The station of 1911 was reoccupied. It is about one-fourth mile southeast from the town's center, in a strip of land between the road to the southeast of the courthouse and the southeast fence of the courthouse ground. It is 42.8 feet southeast from the southeast fence of the courthouse ground and 86.8 feet southwest from the east corner of the iron fence surrounding the courthouse. It is marked by a Bedford limestone post 8 by 6 by 30 inches, with a bronze disk set in the top, projecting 2 inches above the ground. The following true bearings were determined:

	° ′
Northwest corner of foundation of Methodist Church (mark)	37 49.2 west of south
Top of water tower at courthouse	53 18.9 west of north
Lower southwest corner of foundation of Methodist Church	22 39.8 west of south
Northeast corner of southeast chimney of courthouse	69 50.8 west of north

Six auxiliary stations were also occupied. Station A is about 200 feet northeast from the primary station. Station No. 1 is in the southwest corner of the old abandoned courthouse square at Toledo. It is 3½ miles southeast from Rison. No. 2 is on the McLendan farm, in the central part of the field on the east side of the next house west on the road from the residence of Mr. McLendan. It is about 4½ miles west from Rison. No. 3 is in the western part of an inclosed field north across the railroad tracks from the general store at Saline Siding. It is about 7 miles a little west of south from Rison. No. 4 is near the center of the town of Clio, in an open space on the north edge of a grove, about 200 feet west from the schoolhouse and about 300 feet southeast from the hotel. It is about 4 miles northeast from Rison. No. 5 is on the east shore of Greys Lake, where the trail to the lake meets the water. It is 7 miles almost due west from Rison.

Sparkman, Dallas County.—The station is in the eastern part of a lot used as a park on the east side of the Methodist Church, about one-fourth mile southwest from the town's center. It is 86.5 feet west from the fence across the road to the east, 235.3 feet east from the northeast corner of the Methodist Church, and 19.4 feet a little east of north

ARKANSAS—continued.

from the center of the trunk of a lone pine tree. It is marked by the neck of a white glass bottle buried about 5 inches under the ground. The following true bearings were determined:

	° ′	
Lower northwest corner of Methodist Church (mark)	86 04.1	west of south
Lower northeast corner of schoolhouse	50 03.8	west of north
Lower southeast corner of Methodist Church	74 03.8	west of south

Star City, Lincoln County.—The station is in the northeastern corner of the school ground, about one-fourth mile south from the town's center. It is 96.2 feet south from the north boundary fence, 84 feet west from the east boundary fence, and 196 feet a little east of north from the corner of the schoolhouse. It is marked by a limestone post 6 by 6 by 27 inches, with a bronze disk set in the top, projecting about 2 inches above the ground. The following true bearings were determined:

	° ′	
Top of courthouse cupola (mark)	2 13.6	west of north
Upper northwest corner of foundation of schoolhouse	25 21.2	west of south
Top of schoolhouse cupola	19 19.3	west of south

CALIFORNIA.

Cooperstown, Stanislaus County.—The station is in the field just north of the store and railroad station, on the second hill as one walks north from the station. It is about 306 long steps north from the United States Geological Survey station, which is next to the yard of the storekeeper's house, 77.2 feet from a large tree to the southwest, 115.2 feet from a large tree to the east-southeast, 15.7 feet from a 7-inch scrub oak tree northwest of the station, and 15 feet from a 4-inch scrub oak tree southwest of the station. The station is marked by a stick of oak stove wood driven several inches into the ground. A hole in the top marks the center. The following true bearings were determined:

	° ′	
Point on top of railroad water tank (mark)	28 22.7	west of south
Base of telegraph pole just east of the road leading south from railroad	15 47.5	east of south
North (near) gable of store building	31 34.5	west of south
Top point of a distant pyramid-shaped butte	81 29.4	west of south

Downieville, Sierra County.—The station is on the grounds of the county hospital, across the road from the main building, near the south-southeast corner of their potato patch. It is 19 feet from the southeast fence (the one next to the north fork of North Yuba River), 47 feet from the southwest fence, 70 feet from the northwest fence (the one next to the road), and 175 feet from the southeast corner of the main hospital building. The station is marked by a bronze disk set in the top of a rough slate-colored stone, projecting about 3 inches above the ground. The following true bearings were determined:

	° ′	
Gable of slaughterhouse (mark)	16 33.3	west of south
Near edge at base of David Campbell's tombstone	69 23.7	west of south
Left-hand southwest corner of main hospital building	23 28.4	west of north
Northeast corner (right hand) of hospital barn building	25 01.9	east of north

Galt, Sacramento County.—The station is on the grounds of the grammar school, about 175 feet southeast of the building. It is 214 feet from the northeast corner of the school building, 149.5 feet from the southeast corner of the school building, and 67 feet from the path along the road at the east side of the school yard. A piece of oak stove wood about 6 by 6 by 15 inches was buried about 4 inches below the surface. A piece of pine was driven into the ground besides the oak marking post and allowed to come just to the top of the ground. A cross hacked in the middle of the oak post marks the center. The following true bearings were determined:

	° ′	
Top of tank house in graveyard 1 mile south (mark)	4 55.0	east of south
Central cross on Catholic Church	70 25.8	west of south
Northeast edge of school building	58 18.9	west of north
Methodist Episcopal Church steeple	14 48.0	west of north
Tip of Mr. Hawsheel's water-tank house	38 37.7	east of north

Goat Island, San Francisco County.—The station of 1912 was reoccupied. It is near the center of the plateau just west of the hill at the extreme eastern end of the island, on ground belonging to the Army. The station is about 50 feet north of the line joining the wireless mast, on the highest part of the island, and the flagpole on the southern part of the lawn in front of the officers' quarters. It is marked by a rough stone 6 by 6 by 12 inches, projecting about 2 inches above ground, and having a broken and rather slanting top in which there is a small hole to mark the exact spot. The following true bearing was determined:

	° ′	
Base of flagstaff on lawn (mark)	42 47.3	west of south

Jackson, Amador County.—The station is near the middle of the knoll in the pasture lot of the county hospital just west of the main building, about three-eighths mile east of the courthouse. It is 113.8 feet from the fence to the west, 67 feet from a double oak tree just north, and 73.8 feet from the southwest corner of the small sleeping house

CALIFORNIA—continued.

of the watchman at the hospital. The station is marked by a bronze disk set in the top of a white granite monument 6 by 7 by 36 inches, projecting 4 inches above the ground. The following true bearings were determined:

	°	′	
Center of old brick chimney of the sulphurate works, three-fourths mile south (mark)	35	41.1	east of south
Lone tree on north side of Butte Mountain (tree is 49 feet from top of mountain)	73	47.2	east of south
Steeple of Methodist Episcopal Church	64	40.3	west of south
Northeast edge of Argonaut Mine Co.'s new building	52	08.0	west of north
Nearest edge middle of chimney on hospital building	43	04.8	east of north

Mariposa, Mariposa County.—The station is in the north pasture of the county hospital grounds, about one-half mile south of the courthouse. It is 500 feet north of the main hospital building, 100 feet east of the southeast corner of the posthouse, and 104.4 feet north of the corner post of a fence which incloses a yard and garden belonging to the hospital. The middle of the road which runs up to the hospital is 110 feet southeast of the station. The station is marked by a bronze disk set in the top of a concrete pier. The following true bearings were determined:

	°	′	
Middle (near) edge of cupola of courthouse (mark)	11	57.2	west of north
Middle of jail door	43	38.7	east of north
Steeple of Catholic Church	82	05.1	east of south
Center of gable near end on superintendent's house at hospital	37	39.9	east of south

Martinez, Contra Costa County.—The station is on the top of the hill, 500 feet west of the county hospital building, and near the middle of their pasture. It is 37.8 feet from an arrow cut in the north side of a large whale-back shaped dark-colored rock that sticks up above the ground in the pasture, 103.4 feet from the south fence of the pasture, and 89.2 feet from the west fence of the same. The station is marked by a white granite rock 6 by 6 by 36 inches, with a bronze disk set in the center, projecting about 3 inches above the ground. The following true bearings were determined:

	°	′	
Center of the Mt. Copper Co.'s chimney, about 3 miles north (mark)	31	28.1	east of north
Center of brick chimney at Benicia	3	29.3	west of north
Tower on Catholic school building	47	26.2	east of north
Cupola on top of house near west abutment of Santa Fe Railroad bridge (2 miles south)	13	45.0	east of south

Quincy, Plumas County.—The station is near the middle of the south side of the barn lot of the county hospital, about 250 feet southwest from the main hospital building and 1½ miles northwest of Quincy. It is 68 feet from the south fence, 37.8 feet from the west fence of the lot, 142.8 feet from the concrete barn building, and 30 feet from the east fence of the barn lot. The station is marked by a bronze disk set in the top of a concrete pier, projecting 5 inches above the ground. The following true bearings were determined:

	°	′	
Middle of dormer window on Stillman's ranch house (mark)	54	54.9	west of south
Nut on stay rod over barn door	3	11.4	west of north
Methodist Episcopal Church spire in Quincy	44	23.3	east of south
Courthouse cupola in Quincy	39	34.9	east of south
Near gable of power-house building	18	54.0	east of south

San Andreas, Calaveras County.—The station is on the grounds of the county hospital, about 1 mile southeast of San Andreas. It is 600 feet northeast of the main building of the hospital, 123.2 feet southeast of the pesthouse, 136.2 feet south of the north pasture fence, and 114.4 feet north of a tree which grows in the fence just south across the road or trail. The station is marked by a bronze disk set in the top of a concrete post, projecting 3 inches above the ground. The following true bearings were determined:

	°	′	
Base of spindle supporting ball capping the main hospital building (mark)	47	00.6	west of south
Lone yellow pine on ridge one-half mile south	24	50.1	west of south
West edge of pump house	22	39.0	east of south
Near corner of old frame house on the road three-fourths mile southeast	27	21.6	east of south

Sonora, Tuolumne County.—The station is near the middle of the south edge of the high school athletic grounds, about three-eighths mile north-northwest of the courthouse. It is 308 feet along the ground surface south from the southeast corner of the high school building, 143.7 feet from the southeast corner of the grandstand, 117.5 feet from the front post at south end of stable, and 34.8 feet north of the present board fence. The station is marked by a bronze disk set in the top of a marble post 6 by 8 by 24 inches. The following true bearings were determined:

	°	′	
Top of windmill on mountain northeast (mark)	44	49.9	east of north
Southeast edge of high-school building near middle	37	00.2	east of north
Corner post of Mr. Cowan's chicken yard on hill east	79	00.4	east of south
Middle near edge of nearest chimney on Knox's house	1	30.2	west of south
Southeast edge of grand stand building 8 feet above ground	72	47.0	west of north

COLORADO.

Brighton, Adams County.—The station is in the southeast section of the city park which adjoins the public-school grounds. It is 46.8 feet north of the fence separating the park from the school grounds, 135 feet from the outside row of trees on the east side of the park, and 53.6 feet from the third tree southeast of the southeast corner of the band stand. A row of trees runs parallel to and 4 feet north of the fence mentioned above, and the tree near the band stand is in line with the station and the northwest corner of the school. The station is exactly in line with the east side of the schoolhouse. The mark is a cement post 5 by 8 by 26 inches with a hole drilled in the top and sets flush with the surface of the ground. The following true bearings were determined:

	°	′	
South gable of house one-fourth mile north of station (mark)	3	40.5	west of north
West gable of house one-fourth mile distant	77	17.9	east of north
Northwest corner of public school	17	03.7	west of south
Flagpole on courthouse	38	59.0	west of south
Northeast corner of Lutheran school	81	23.2	west of north

Littleton, Arapahoe County.—The station is about two-thirds mile west of the courthouse on the west side of the river, 250 yards north of the Platte Canyon road bridge and 93.5 feet north of the wire fence marking the north boundary of the old fair grounds. About 265 feet from the east end of this fence, which stops at the north branch of the river, is a row of three trees, the north one of which is about 30 feet north of the fence and blazed on the north side about 4½ feet above ground. From the station this blaze bears 12° 00′ east of south and is 68 feet distant. A similar blaze on another tree bears 89° 55′ west of north and is 82 feet distant, and one on the large tree in line with the pond 100 feet northeast of the station bears 76° 20′ east of north and is 64 feet distant. The station is marked by a wood post about 3 feet long and 4 inches in diameter projecting 7 inches above ground. Two bottles are buried 1.5 feet north and south of it, and two small rocks are embedded in the ground the same distance east and west of it. The following true bearings were determined:

	°	′	
Nearest ventilator on roof Leyner Engineering Works (mark)	54	52.2	east of north
East gable of barn 1 mile distant	30	49.6	west of south
Apparent highest mountain peak with three knobs	53	32.7	west of south
West corner of barn one-half mile distant	82	31.5	west of north
Northwest side of smokestack on Leyner Engineering Works	54	35.4	east of north

Ramah, El Paso County.—The station is about 100 yards southeast of the Ramah Hotel and 200 yards northwest of the public school. It is in line with the north side of the street running east from the railroad station. A small wood stake was driven into the ground to mark the exact spot. The following true bearings were determined:

	°	′	
North gable of house 250 yards distant (mark)	4	15.0	west of south
North gable of house 200 feet distant	5	17.4	west of south
Highest point on Pikes Peak	67	54.2	west of south

Seibert, Kit Carson County.—The station is in the open fields on the east side of the town. It is about 200 yards northwest of the public school and 300 feet southeast of a garage. A small wood stake was driven into the ground to mark the exact spot. The following true bearings were determined:

	°	′	
West gable of section house (mark)	2	07.2	west of north
East gable of section house	1	10.3	west of north
East gable of hotel	47	27.6	west of north

CONNECTICUT.

New Haven, New Haven County.—The station of 1910 was reoccupied. It is on the grounds of the Yale Astronomical Observatory, about 200 feet north of the transit house, and due north of the eyepiece of the transit instrument, but on account of the building for the new reflecting heliostat camera being within about 50 feet, a new station was established 150 feet south of the transit house, and due south of the eyepiece of the transit instrument. The station is marked by a limestone post 8 by 8 by 30 inches, sunk flush with the surface, with a bronze disk set in the top.

IDAHO.

Albion, Cassia County.—The station is on the campus of the Albion State Normal school. It is 147.2 feet southwest of the southeast corner of the administration building, 123.9 feet southeast of the southwest corner of the same building, 129.2 feet north of the north side of the model school building, and 185.4 feet east of the southeast corner of Hanson hall. It is marked by a round cement post 12 inches in diameter and 30 inches long, larger at base, projecting 3 inches above the ground, rounded on top, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	°	′	
Southwest corner of gymnasium on bricks (mark)	32	52.7	west of north
Chimney on ranch house one-half mile to west	65	29.6	west of south
Northeast corner (U. S.) cement transformer house	44	23.5	east of south
Extreme northeast corner of model school foundation	30	30.4	east of south
Northeast corner of Hanson hall foundation	59	48.1	west of north

IDAHO—continued.

American Falls, Power County.—The station is near the northeast corner of the Remington Hotel grounds, one-fourth mile north of the town's center. It is 22 feet south of the fence on the north property line, 61.2 feet west of the cement walk east of the hotel, and 85 feet north of the northeast corner of the hotel. It is marked by a round cement post, rounded on top, 12 inches in diameter, 30 inches long, larger at the base, projecting 1 inch above ground, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′
Ball at apex of elevated steel water tank (mark)	26 21.6 east of north
Cross on church cupola	44 25.6 east of north
Left edge of brick store	69 38.1 east of south
Northeast edge of school building, on bricks	53 51.6 west of north
South gable of hospital	2 34.3 east of north

Caldwell, Canyon County.—The station is near the north corner of the courthouse square, about one-fourth mile east of the town's center. It is 92.85 feet north of the north corner of the courthouse, 31 feet southwest of the cement walk on the northeast, and 34.25 feet southeast of the cement walk on the northwest. It is marked by a round cement post 12 inches in diameter and 48 inches long, larger at bottom, and rounded on top, with a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′
Ball at apex of steel water tank (mark)	29 20.9 east of north
Right edge of school building, on bricks	53 29.4 east of north
Left edge of county jail	48 23.4 east of south
East corner of courthouse, second floor	25 26.8 east of south
West edge of courthouse corner stone	16 59.6 west of south

Coeur d'Alene, Kootenai County.—The station is near the southeast corner of the high-school grounds, one-half mile northeast of the town's center. It is 133.8 feet southeast of the southeast corner of the steps to the high school, 129.5 feet east of the walk leading south from the high school, 30.5 feet north of the fence on the south of the grounds, 18 feet west of the east edge of the grounds, and 60 feet south of the south side of the high school building produced. The station is marked by a round cement post 6 inches in diameter and 40 inches long, with bronze disk countersunk in the top, the post being set flush with the ground. The following true bearings were determined:

	° ′
Southwest corner of residence just west of high school (mark)	79 31.9 west of north
Left edge of high-school corner stone	69 54.4 west of north
Right edge of high-school building	24 01.4 west of north
Chimney on house across valley to east	89 57.4 east of north
Right edge of brick chimney on house north of high school	2 24.7 west of north

Driggs, Teton County.—The station is near the southwest corner of the square upon which is to be located the county courthouse, near the town's center. It is 38.3 feet north of the south property line, 19.7 feet east of the west property line, and 225 feet southwest of the southwest corner of the jail. It is marked by a round cement post 16 inches in diameter and 24 inches long, larger at base, rounded on top, projecting 3 inches above the surface, and having a bronze disk countersunk in the top. The following true bearings were determined:

	° ′
Flagpole on cupola of Latter-day Saints headquarters (mark)	3 20.1 east of north
South gable of Latter-day Saints stake house	23 51.6 east of north
Right edge of district school building	28 58.8 east of north
Center of extreme top of Teton Mountain (Wyoming)	85 38.8 east of north
West gable of residence just east of courthouse square	87 58.6 east of north

Emmet, Gem County.—The station is near the southwest corner of the high-school grounds, near the center of town. It is 72.6 feet southwest of the south-southwest corner of the school building, 53.1 feet east of the cement walk on the west side of the grounds, and 36.6 feet north of the row of trees on the south side of the grounds. It is marked by a round cement post 18 inches in diameter and 45 inches long, larger at the base, projecting 3 inches above ground, and having a bronze disk countersunk in the top. The following true bearings were determined:

	° ′
Extreme southeast corner of Methodist Episcopal Church (mark)	5 30.4 east of north
Northwest corner of high school on bricks	13 22.3 east of north
Southeast corner of high school on bricks	69 49.3 east of north
Southeast corner of Bank of Emmet on bricks	10 49.1 west of north
Left edge of Methodist Episcopal Church	7 33.5 west of north

A mark on the Methodist Episcopal Church (at present marked with a chisel but later to have brass plate) 20.68 feet west of the east angle or jog on the south side of the church marks the true meridian.

Gooding, Gooding County. The station is near the southwest corner of the high-school grounds, one-eighth mile south of the town's center. It is 130.15 feet southwest of the southwest corner of the high school, 41 feet northeast of the outer corner of the cement walk at the southwest corner of the grounds, 5.85 feet east of the cement walk on the

IDAHO—continued.

west side of the grounds, and about in line with the row of trees on the west side. It is marked by a cement post 12 by 12 by 20 inches, set flush with the ground, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	°	′	
Ball at apex of elevated steel water tower (mark)	11	18.6	west of north
Southwest corner of First National Bank Building, second floor	10	04.4	west of north
Northwest corner of high-school corner stone	32	27.3	east of north
Tip of east gable of Episcopal Church	46	35.4	west of north

McCall, Boise County.—The station is near the southeast corner of the lot upon which is located the United States forestry headquarters, one-eighth mile east of the town's center. It is 32.8 feet southeast of the southeast corner of the house (frame), 37.5 feet west of the east property line, and 5 feet north of the south property line. The station is not permanently marked, but at the request of local authorities the station was temporarily marked by a pine stake, 2 by 4 by 20 inches, projecting 2 inches above ground, and having a nail driven in the top to show the precise spot. The following true bearings were determined:

	°	′	
South gable of Mr. Graff's residence (mark)	8	44.9	east of north
South gable of Mr. Jansen's residence	22	13.0	east of north
West edge of railroad water tank	24	15.0	east of north
North gable of Serle's drug store	45	28.5	west of south
North gable of house on hill east of railroad	43	28.6	east of south

Moscow, Latah County.—The station is on the campus of the University of Idaho near the bottom of a small hill and just south of a road. It is one-half mile southwest of the town's center. It is 66.9 feet south and a little east of the extended foundation of the main building, 139.7 feet northwest of the southwest corner of the old school of mines, 143.1 feet southwest of the northwest corner of the school of mines, and 54.1 feet southwest of a cement walk. It is marked by a round cement post 18 inches in diameter and 24 inches long, projecting 4 inches above ground, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	°	′	
Left edge of courthouse tower (mark)	60	25.8	east of north
Southwest corner of lowest base stone of Hogburg monument	45	02.4	east of north
Ball at apex of elevated steel tank	45	28.9	west of south
Flagpole on gymnasium	36	56.2	west of north
Spire on left-hand cupola of barn	50	59.2	west of north
Triangulation station near fire station	6	30.2	east of north
Cement post near walk, north side of campus	3	12.2	east of north
Cement post near tree in front of main building	7	19.0	east of north

Nezperce, Lewis County.—The station is near the northwest corner of the high-school grounds, one-eighth mile north of the town's center. It is 50.6 feet east of the row of trees on the west side of the grounds, 14.5 feet south of the row on the north, 175.8 feet west of the west side of the gymnasium, 265.6 feet northwest of the northwest corner of the new high-school building, and 165.4 feet northwest of the southwest corner of the south part of the old high-school building. It is marked by a round cement post 12 inches in diameter and 18 inches long, larger at the bottom, projecting 2 inches above ground, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	°	′	
South gable of residence about one-half mile to northeast (mark)	60	00.8	east of north
Right edge of west chimney on new brick high school	71	10.1	east of south
North gable of the Nezperce Roller Mills	13	02.1	east of south
Cupola on barn on hill 1 mile to south	1	43.8	east of south
Northwest corner of new high school just under eaves	75	23.0	east of south

Orofino, Clearwater County.—The station is near the northeast corner of the school grounds, one-eighth mile north of the town's center. It is 317.2 feet east of the walk on the west side of the grounds, 8 feet south of the walk on the north side of the grounds, 58 feet west of the southwest corner of the small fire station, and 153.2 feet northeast of the northeast corner of the brick school building. It is marked by a round cement post 18 inches in diameter and 30 inches long, projecting 4 inches above ground, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	°	′	
East gable of Frank Zelenke's residence (mark)	69	48.6	west of south
Apex of large hydrant near northwest corner of school grounds	69	54.8	west of south
Northwest corner of brick school building (on water table)	47	32.2	west of south
Northwest corner of Thomas Nygard's residence	24	29.9	east of north

Pocatello, Bannock County.—The station of 1910 was reoccupied. It is on the grounds of the Idaho State Academy, 1½ miles east of the town's center. It is 108 feet southeast of the iron fence on the northwest side of the grounds.

IDAHO—continued.

28.5 feet southwest of a row of trees (in line with the southwest side of the main building), and 185.7 feet northwest of the southwest corner of the main building. It is marked by a lava post 6 by 6 by 30 inches, with a cross in the center, and set flush with the surface. The following true bearings were determined in 1910 and 1916:

	° ′
Flagpole on courthouse cupola (mark)	50 36.6 west of north
Center of high brick smokestack	69 41.6 west of south
Roof gable above front entrance to girls' dormitory	23 34.4 east of south
Right edge of girls' dormitory on bricks	15 51.9 east of south
Right edge of brick residence near northwest entrance to campus	7 00.2 east of north

Pollock, Idaho County.—The station is on a bench between the Rapid River and the Little Salmon River, about 50 feet north of the base of a high hill, 115 feet west of the west side of the schoolhouse, about 400 feet west of the Little Salmon River and 200 feet east of the Rapid River, and 500 feet southwest of the hotel. The station is not marked.

Rexburg, Madison County.—The station is on the grounds of the Ricks' Academy, one-fourth mile south of the town's center. It is 239 feet north of the northeast corner of the main building; 38.8 feet east of the east side of the walk leading north from the main entrance; 79.4 feet south of the fence on the north side of the grounds. It is marked by a round cement post 14 inches in diameter, larger at base, 24 inches long, rounded on top, projecting 2 inches above the surface, and having a bronze disk countersunk in the top. The following true bearings were determined:

	° ′
Spire on cupola of Latter-day Saints Church, first ward (mark)	29 04.7 east of north
Northeast corner of Ricks' Academy, second floor	4 31.7 east of south
Northwest corner of Ricks' Academy, second floor	24 0.52 west of south
Left edge of south chimney on hospital	21 16.1 west of north
Left edge of chimney on residence just east of academy	65 32.6 east of south

Rigby, Jefferson County.—The station is near the southeast corner of the city park, about one-tenth mile northwest of the town's center. It is between two rows of trees on the east side of the park; 117 feet southeast of the southeast pier supporting the elevated tank; 103.5 feet west of the west side of the cement walk on the east side of First Street west; and 412.8 feet north of the north side of the walk along the north side of Main Street. It is marked by a round cement post 15 inches in diameter and 30 inches long, set flush with the ground, and having a bronze disk countersunk in the top. The following true bearings were determined:

	° ′
Right edge of county jail (mark)	31 55.8 west of south
Left edge of high school, on bricks	71 54.8 west of south
Spire on church cupola	54 09.6 west of north
Northwest corner of hospital	29 55.3 east of north

Auxiliary observations were made 200 feet southwest of primary station.

Rupert, Minidoka County.—The station is near the southeast corner of the courthouse square, near the center of the town. It is about in line with the second row of trees from the south side; 125.1 feet southeast of the southeast corner of the courthouse; 121.7 feet west of the cement walk, which is east of the street east of the courthouse; and 72.7 feet north of the cement walk, which is south of the street south of the courthouse. It is marked by a round cement post 15 inches in diameter, 48 inches long, larger at the base, projecting 4 inches above ground, rounded on top, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′
Apex of elevated steel water tank (mark)	77 11.1 east of south
Southwest corner of Mrs. Gooch's cement house	5 11.3 west of north
Southeast corner of cement foundation of Mr. Stevenson's bungalow	73 19.0 west of north
Center of base of right-hand lamp-post near park	43 35.4 east of south
Southeast corner of the Latter-day Saints Church foundation	27 19.8 east of north.

Auxiliary observations were made 250 feet east of the primary station.

Silver City, Owyhee County.—The station is on a high ridge (Potosi Point) about 300 feet above the level of the town and about one-fourth mile south of the town's center. It is near the middle of the ridge, and 52 feet south of the north point, measured in line with the Episcopal Church. It is marked by a bronze disk countersunk in bedrock. The following true bearings were determined:

	° ′
East gable of transformer house at Silver City mine (mark)	88 11.4 west of south
Cross on Episcopal Church spire	11 29.4 east of north
Apex of cupola on school building	15 04.0 east of north
West gable of residence about 1 mile up Jordan Valley	23 29.4 east of south
Apex of high peak to left of road entering canyon, 1 mile north	10 58.4 east of north

Smith's Ferry, Boise County.—The station is about 400 feet east of the railroad upon a hillside; it is also 150 feet northeast of a spring. The station is not marked.

IDAHO—continued.

St. Maries, Benewah County.—The station is near the northwest corner of the high-school grounds, one-half mile west of the town's center. It is 41.1 feet east of the street curbing just west of the grounds; 18.1 feet southeast of a fir tree; 54.7 feet north of low cement wall in front of the school building; 114.4 feet north and a little west of the northwest corner of the school building, the west side of which produced passes 31.8 feet east of the station. The station is marked by a cement post 12 by 12 by 24 inches, rounded on top, flush with the ground, with a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′
Left edge of burner at sawmill (mark)	40 43.0 west of north
West gable of house just east of high school	66 47.0 east of south
Northeast corner of high-school foundation	53 10.4 east of south
Southwest corner of high school, second floor	6 11.2 east of south
North gable of Trueman's residence	3 27.2 east of south

Twin Falls, Twin Falls County.—The station is near the north corner of the courthouse square, near the town's center. It is 125.1 feet north of the north corner of the courthouse; 106.8 feet from the edge of the walk on the northwest side of the square; 24.4 feet from the edge of the cement walk leading to the high school from Fifth Avenue north; and 91 feet southwest of the west corner of the high-school building. It is marked by a round cement post 12 inches in diameter, 30 inches long, rounded on top, projecting 1 inch above the ground, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′
Methodist Episcopal Church spire (mark)	4 41.0 east of south
Right edge of courthouse, on bricks	29 34.6 west of south
Right edge of Baptist Church, on bricks	57 40.9 west of south
Right-hand chimney on house at end of Fifth Avenue north	44 38.1 west of north
Left edge of high school, second floor	54 24.3 east of north

Seven auxiliary stations were also occupied. Station A is 103 feet N. 45° 52.8′ W. of the principal station. Station B is 210 feet S. 45° 53.5′ E. of the principal station. Station C is 220 feet S. 62° 31.1′ W. of the principal station. Station D is 250 feet N. 18° 04.4′ E. of the principal station. Station No. 1 is in a field one-half mile north and 3¼ miles east of the principal station. No. 2 is in a field 3½ miles south and 1½ miles west of the principal station. No. 3 is in a field 2½ miles north and 4 miles west of the principal station.

Wallace, Shoshone County.—The station is on the highest point of the hill, about one-fourth mile northeast of the courthouse and about 400 feet above the main street. The highest point of the hill is about one-fourth mile south of the north side of the city park. The station is best reached by road to Buena Vista Heights and trail through the park. The station is marked by a round cement post 12 inches in diameter and 24 inches long, with bronze disk countersunk in the top, projecting 1 inch above ground. The following true bearings were determined:

	° ′
Right edge of reservoir on opposite hill (mark)	34 15.0 east of south
North gable of house on opposite hill	00 35.4 east of south
Flagpole on courthouse	35 27.1 west of south
Northwest corner of courthouse, second floor	37 42.0 west of south
Ball on high-school tower	87 59.3 west of north
Apex of cupola on First National Bank	52 19.0 west of south

INDIANA.

Indianapolis, Marion County.—The station of 1909 was reoccupied. It is in Riverside Park, about 5 miles northwest of the courthouse. It is near the break of the hill in the western part of the park, about 200 yards north of Thirtieth Street. It is 45, 42, and 18 feet, respectively, from three trees and northwest of the bear cage. It is marked by a stone post 6 by 6 by 36 inches, projecting 12 inches above the ground, and lettered U. S. C. & G. S. The following true bearings were determined in 1909 and 1916:

	° ′
Center of head of figure on soldiers' monument (mark)	37 06.5 east of south
Steeple of small church	73 51.6 west of south
South gable of most southerly of three green barns	39 50.7 east of north

IOWA.

Adair, Adair County.—The station is near the southwest corner of the school grounds near the center of town. It is 159.9 feet south of the southwest corner of the school building, 64 feet north of a row of large maple trees, 176.8 feet west of the brick walk east of the street east of the school, and 112.7 feet east of the cement walk west of the street

IOWA—continued.

west of the school. It is marked by a Bedford limestone post 6 by 8 by 30 inches, with bronze disk in the top, set flush with the ground. The following true bearings were determined:

	°	′	
Left edge of high-school building (mark)	1	54.3	west of north
Center of flagpole on high-school cupola	3	10.7	east of north
Southwest corner of Bruce Moorse's residence	44	49.7	east of north
Northwest corner of Mr. Peter's residence	4	03.2	west of south
Southeast corner of brick porch on Catholic parsonage	13	53.6	west of north

Avoca, Pottawattamie County.—The station is in the fairgrounds, one-fourth mile south of the town's center. It is 361.8 feet east of the northeast corner of the grand stand, 81.8 feet north of the fence around the race track, 314.5 feet west of the fence along the east side of the grounds, and 226 feet southeast of the tree at the southeast corner of the grove. It is marked by a Bedford limestone post 6 by 7 by 30 inches, with bronze disk in the top, projecting 1 inch above the ground. The following true bearings were determined:

	°	′	
Lutheran Church spire (mark)	8	18.2	east of north
West gable of a farmhouse	58	40.5	east of south
Steel windmill	67	27.5	west of south
Spire on judge's stand	72	01.7	west of south
Southeast corner of main exhibition hall	31	35.2	west of north

Earlham, Madison County.—The station is on the high-school grounds, one-fourth mile north of the center of the town. It is on the athletic field between the track and the row of trees on the east side of the grounds, 345.8 feet north of the cement sidewalk along the south edge of the school grounds, 96 feet west of the cement sidewalk east of the street east of the grounds, and 32.5 feet west of the row of trees on the east side of the grounds. It is marked by a Bedford limestone post 6 by 8 by 30 inches, with bronze disk in top, set flush with the ground. The following true bearings were determined:

	°	′	
Left edge of high-school building (mark)	11	03.9	west of south
West gable of Mr. Shakley's residence	64	44.9	west of south
West gable of Mr. Fitz's residence	79	32.9	west of south
Southwest corner of foundation of Mr. Malyneck's residence	13	14.4	west of north
Northwest corner of foundation of Christian Church	35	50.7	east of south

An auxiliary station was occupied 331.9 feet to the south.

Keosauqua, Van Buren County.—The station is near the east corner of the courthouse square, one-fourth mile north of the town's center. It is 201.7 feet east of the east corner of the jail, 125.6 feet southeast of the east base stone of the elevated tank, and 9 feet northwest of the first row of trees on the edge of the courtyard. A deep ravine passes about 200 feet northeast of the station. The station is marked by a marble post 6 by 10 by 30 inches, lettered, U. S., with cross and drill hole, projecting 1 inch above ground. The following true bearings were determined:

	°	′	
Right edge of brick church (mark)	80	14.1	east of north
Right edge of chimney on above church	77	18.4	east of north
Extreme right edge of north base stone of water tower	61	06.7	west of north
Left edge of G. A. R. monument on stone bearing inscription	42	31.3	west of south
West gable of brick church	74	52.4	east of north

Oskaloosa, Mahaska County.—The station of 1908 was reoccupied. It is in the open space about one-fourth mile north of Penn College and about one-half mile north of the town's center. It is 400 feet west of the west side of North Market Street, 30 feet southwest of a pump, and just west of a group of trees. It is marked by a marble post 6 by 6 by 24 inches, lettered U. S. C. & G. S., 1908, set flush with the ground. The following true bearings were determined in 1916:

	°	′	
Spire on courthouse tower (mark)	11	29.7	east of south
East edge of standpipe	15	18.5	west of south
West edge of standpipe	15	46.5	west of south
Center of cupola on Penn College	20	44.9	west of south

KANSAS.

Columbus, Cherokee County.—The station is in the southeast part of the high-school grounds, about one-fourth mile west of the courthouse. It is about 100 feet north of the street bounding the grounds on the south and 79.7 feet from the cement walk on the east. It is marked by a limestone post 7 by 7 by 27 inches, set in concrete, with a bronze disk embedded in the top, projecting about 3 inches above ground. The following true bearings were determined:

KANSAS—continued.

	°	′	
Nail in tree (mark)	0	18.9	east of north
Northwest corner of grammar school (above foundation)	74	22.6	east of north
Southwest corner of house, 250 yards distant	17	55.1	east of south
Southeast corner of house, 150 yards distant	24	27.2	west of south
Lower gable, south side of house, 200 yards distant	73	18.9	west of north

The north end of a meridian line about 530 feet long is marked by a concrete post 1 yard long, projecting about 4 inches above ground. This post is about 8 inches in diameter at the top and has a bronze disk embedded in it. It is 7 feet south of the second tree from the street east, on the north side of the field, and about 18 feet south of the sidewalk.

Winfield, Cowley County.—The station of 1902 was reoccupied. It is in the northwest corner of the campus of Southwest Kansas College, 330.5 feet from the northwest corner of the college building, 117 feet from the porch of the house on the north side of the road, and 28.4 feet from a pine tree to the southwest. The station is marked by a limestone post 7 by 8 by 36 inches, set flush with the ground, and lettered on top U. S. C. & G. S., 1902. The following true bearings were determined in 1911:

	°	′	
Southwest corner of old college building (mark)	33	46.8	east of south
Northeast corner of a house (near ground)	66	49.8	west of south
Apex letter "A" in "Art," new college building	53	47.6	east of south
West gable of house on hill	78	24.0	east of north

KENTUCKY.

Anchorage, Jefferson County.—Observations were made about one-third mile south of the interurban depot in a rectangular lot owned by Mr. Drummond. It is on the west side of the road and at the bottom of the hill running down (southward) from the Louisville & Nashville Railroad tracks. It is 138 feet from the west fence and 172 feet from the north fence. A wood stake was driven into the ground to mark the exact spot. The following true bearings were determined:

	°	′	
South gable of wood house 250 yards distant (mark)	9	52.0	west of north
North gable of residence one-fourth mile distant	88	27.8	west of south

Buckner, Oldham County.—Observations were made about one-half mile north of the village at a point where the main road makes a 90 degree turn to the west. It is in the field on the inside of this turn 39.5 feet from the east fence and 50.5 feet from the north fence. A wood stake was driven into the ground to mark the exact spot. The following true bearings were determined:

	°	′	
Northeast corner of farmhouse 500 yards distant (mark)	56	53.5	west of north
Top of sixth telegraph pole from magnetic station on road to depot	10	31.9	east of south

Eastview, Hardin County.—Observations were made in a meadow about 200 yards west of the railroad station and on the north side of the road leading from the station. The spot selected was about 35 feet from the east fence and 50 feet from the south fence. The station was not marked.

Pendleton, Henry County.—Observations were made in a large open field belonging to Mr. Coleman, 300 yards east of the depot. It is 3 feet south of the line of fences on the north side of the road leading to the railroad station, 48 feet from the southwest fence, and 91 feet from the northwest fence. A wood stake was driven into the ground to mark the spot. The following true bearings were determined:

	°	′	
Northwest corner of house 200 yards distant (mark)	8	59.7	east of south
West gable of Coleman's barn	32	58.1	east of north
East gable of residence 300 yards distant	60	18.8	west of north

Shelbyville, Shelby County.—The station of 1871 was found to be of no further use for magnetic observations. A new station was established about 1½ miles northeast of the old station on the property of E. R. Guthrie, which is on the north side of the Shelbyville and Eminence pike. It is in the large field in front of the residence, between two prominent maples setting about 700 feet south of the garage, 25 feet from the tree on the northeast and 72 feet from the fence on the east side of the field. These maples are about 100 feet apart, and the station is exactly in line with them. The spot is marked by a cement post 8 by 8 by 36 inches, with a bronze disk set in the top, projecting about 6 inches above ground. The following true bearings were determined:

	°	′	
South gable of large barn three-fourths mile distant (mark)	35	18.2	east of north
Apex of silo across railroad tracks	70	20.3	east of south
West gable of residence one-fourth mile distant	65	03.5	east of north
Southwest corner of Guthrie's residence	15	52.6	west of north
Weather vane on barn 300 yards distant	41	46.2	east of north

A similar post set on the south side of the road in front of the garage marks the north end of a meridian line.

KENTUCKY—continued.

Spring Lick, Grayson County.—Observations were made in Mr. McGill's pasture about 150 yards due south of the railroad station and about 50 feet east of a small drainage ditch. This spot is about 200 yards north of Caney Creek and is not marked.

LOUISIANA.

Jena, La Salle Parish.—The station is in the southwestern part of the high-school grounds, about 1¼ miles east from the town's center. It is 153 feet north from the boundary fence to the south and 262.5 feet west from the southwest corner of the high-school building. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk set in the top, projecting 3 inches above the ground. The following true bearings were determined:

	° ′
Lower northwest corner of high-school building (mark)	59 39.7 east of north.
Lower southeast corner of high-school building	81 38.2 east of north
Top of Methodist Church steeple	83 47.4 west of north

Jonesboro, Jackson Parish.—The station is in the eastern part of the school grounds, about one-fourth mile northwest from the town's center. It is 244.7 feet northeast from the southeast corner of the school building, 243.6 feet a little south of east from the northeast corner of the school building, and 96.4 feet southwest from the southeast corner of a fence surrounding a cabin to the north. It is marked by a limestone post 5 by 5 by 24 inches, cut to a point at the top to indicate the exact spot and so buried that this point is flush with the ground. The following true bearings were determined:

	° ′
Lower southeast corner of school building (mark)	84 44.2 west of south
Top of Methodist Church cupola	78 41.9 east of south
Top of Baptist Church steeple	67 24.2 east of north
Lower northeast corner of school building	82 39.3 west of north

Ruston, Lincoln Parish.—The station of 1910 was reoccupied, but owing to the disturbing influence of power lines and iron fences a new station was established about 800 feet to the northeast. The new station is in the northeastern part of the grounds of the State Industrial Institution, about three-fourths mile southwest from the town's center. It is 317.2 feet southeast from the northeast corner of the main office building and 177 feet northwest from the boundary fence to the southeast. It is marked by a limestone post 6 by 6 by 28 inches, with a bronze disk set in the top, projecting 2 inches above the ground. The following true bearings were determined:

	° ′
Top of Methodist Church belfry (mark)	58 37.4 east of north
Upper northeast corner, under eaves, of main office building	62 19.8 west of north
Lower southeast corner of machine shop	69 26.2 west of south
Top of courthouse dome	87 05.1 east of south

Auxiliary observations were made 400 feet northeast of the old station.

Tallulah, Madison Parish.—Observations were made about 150 feet south of the probable location of the station of 1910. It is in the southern corner of a pasture which is southwest across the fence from the southern corner of what was once the parish farm. The point taken was about 50 feet from the southeast fence and the southwest fence, respectively, of the pasture. Since this pasture is plowed up at regular intervals, the station was not marked.

MAINE.

Alfred, York County.—Observations were taken over a point 25 feet south of the center of the south stone of the county meridian line established in 1870 about 1 mile south of Alfred and exactly in line with the two stones. The meridian line is about 450 feet long. The station is unmarked.

Five auxiliary stations were also occupied. Station A is over the south meridian stone. No. 1 is 4 miles north of the center of the village of Alfred, near "Old Corners," in a pasture on the west side of the road, belonging to the Jordan estate. It is 35 feet from the road fence and about 10 feet south of an old cellar hole. No. 2 is 2 miles north of Springvale, in an old wood road about 100 feet east of the main road. No. 3 is 2 miles east and a little south of Sanford and one-fourth mile south of the electric-car line, on a corner lot back of an old house about 100 feet from the Wells Road. No. 4 is 4.4 miles east of Alfred, on the Biddeford Road, near Roberts Corners. It is in a pasture about 100 yards north of Roberts Corners and 100 feet east of the road fence.

Calais, Washington County.—On account of grading operations in the vicinity of the station of 1906 it could not be accurately reoccupied. It is one-fourth mile south of the high-school building in the fair ground. It is inside the race course and about 10 feet from the fence, about 12 feet southeast of a ledge which has been partly blasted away and just west of the baseball diamond. The station is marked by a white marble post 8 by 8 by 20 inches, projecting 2 inches above ground, and lettered U. S. C. & G. S., and center marked by a white metal plug. The following true bearings were determined:

	° ′
Flagpole on high-school building (mark)	0 58.7 east of north
Cross on Catholic Church spire	31 16.2 east of north
Transit pier back of high school	1 15.8 west of north
Vane on clock tower (Milltown)	55 04.7 west of south
Church spire in Milltown	54 24.5 west of south

MAINE—continued.

Four auxiliary stations were also occupied. Station No. 1 is 4.8 miles from Calais on the down-river road, about 20 feet north of the road and 16 feet east of a maple tree which stands in a schoolhouse yard. No. 2 is on the Canadian side, in a pasture besides the road, about 4½ miles northeast of St. Stephen on the road to St. Andrews. No. 3 is on the Canadian side a little more than 4 miles a little west of north from St. Stephen. No. 4 is about 5 miles from Calais on the up-river road. It is in an old gravel pit on the east side of the main road and about one-eighth mile south of the road leading to Baring.

Dover, Piscataquis County.—The station is on the crest of the ridge in the southwestern part of the town reservoir tract, three-fourths mile southwest from the business portion of the town. It is 80 feet from the southwest corner of the reservoir and about 15 feet from the west boundary line of the tract. The station is marked by a bronze disk set in cement. The following true bearings were determined:

	°	′	
Spire on Congregational Church, Foxcroft (mark)	42	46.0	east of north
Pinnacle on belfry of schoolhouse, Foxcroft	46	02.2	east of north
Vane on barn of A. W. Gilman	43	41.8	west of north
Small vane on yellow barn	68	10.5	west of south
Windmill on farm one-half mile to south	32	39.0	east of south

Eastport, Washington County.—The station of 1910 being unsuitable for further magnetic observations, a new station was established about one-sixth mile northeast of the Eastport standpipe, in a pasture belonging to Mr. J. R. Roche. It is south of the eastern one of two prominent ledges known as the "Batteries," about 450 feet from the main road to the east, 200 feet from a fence to the south; it is just south of the rocky knoll on which the old station was located 125 feet south of the road leading into the baseball grounds, 114.6 feet from an iron pin in a rocky ledge to the south. A second iron pin is 118.4 feet northeast from the station in a ledge near the road. The station is marked by a bronze disk set in a cement base 14 inches square. The following true bearings were determined:

	°	′	
Lighthouse on Eastpoint (Canadian side) (mark)	11	15.3	east of south
Spire of Unitarian Church	27	24.0	east of south
Spire of Congregational Church	44	43.0	east of south
Left edge of standpipe	72	11.0	east of south

Ellsworth, Hancock County.—The station is one-half mile east of the center of town in the old fair grounds, about 180 feet south of the entrance gate. It is outside of the race track, and about 8 feet west of the foot of the embankment at the west end of the course. The station is marked by a bronze disk set in the top of a concrete block 6 by 6 inches on top and projecting 16 inches above ground. The following true bearings were determined:

	°	′	
Cross on Catholic Church (mark)	80	20.3	west of south
Southeast carner of brown house	42	02.8	west of south
East point on roof of house of ex-Senator Eugene Hale	25	35.4	west of north
Vane on steeple of Congregational Church	86	31.6	west of south

Fort Kent, Aroostook County.—The station of 1910 was reoccupied. It is on the point on which stands the old blockhouse of 1838; on land owned by Mr. Dickey, and across the street from his residence. It is 136 feet slightly east of south from the southeast corner of the blockhouse and 24 feet west from the edge of the bank and just west of the trail leading to the blockhouse. The 4-inch sewer tile used to mark the station was found to be badly broken and was replaced by a cement post 12 inches in diameter and 40 inches long, having a bronze disk set in the top, setting flush with the ground. The following true bearings were determined:

	°	′	
Cross on Catholic Church (mark)	89	02.8	east of south
East side of top of tower of new Catholic Church	74	35.4	east of north
North gable of Dickey Hotel	13	01.9	east of south

Houlton, Aroostook County.—The station of 1887 was reoccupied. It is located in the parade grounds of old Hancock Barracks, about 1 mile east of town. The exact point is over the center of the central granite pier of the three piers which mark the county meridian. The point of the southern pier was used as the mark or range and found to bear 0° 03′ east of true south.

Machias, Washington County.—The station is one-fourth mile south of the center of town on the grounds of the Washington County Normal School. It is about 160 feet due north of the entrance to the building, 61.8 feet from the northeast corner of the cement platform around the flagpole, and 122.7 feet west of a large linden tree. The station is marked by a bronze disk set in the top of a granite post, 6 by 6 by 36 inches, projecting 12 inches above the ground. The following true bearings were determined:

	°	′	
Vane on courthouse (mark)	9	01. 9	west of north
Spire of Congregational Church	2	13. 8	east of north
Catholic Church spire	17	54. 2	west of north
South edge of city standpipe	76	26. 6	west of north
Northwest corner of normal school's main wall	18	22. 1	west of south

MAINE—continued.

Millinocket, Penobscot County.—The station is on the grounds of the Great Northern Paper Co., south of the village, and one-fourth mile a little south of west of the mill. It is 12 feet north of the edge of the road leading from the mill to the stone dam, at a point about 800 feet west of the sluice, and just on the crest of the hill, known locally as Shack Hill. The station is marked by a bronze disk set in the top of a cement post 8 by 8 inches, projecting 12 inches above the ground. The following true bearings were determined:

	°	′	
Base of pinnacle on water tank (mark)	53	36. 8	east of north
Stack of paper company, left edge of cap	39	31. 5	east of north
Northwest corner of main wall of mill	50	08. 0	east of north

Skowhegan, Somerset County.—The station is on a plat of ground belonging to the town, about one-half mile northeast of the business section. It is in the south end of the plat, about 200 feet north of the residence of Mrs. Parkman, which is to be developed for a cemetery. About 15 feet from the southwest line of the plat, 23 feet east of an old apple tree standing on the Parkman property, and 23 feet north of a clump of three white birches standing very near the line. The station is marked by a bronze disk set in the top of a cement block 3 feet long and 8 by 8 inches on top, projecting 1 foot above the ground. The following true bearings were determined:

	°	′	
Ball on standpipe at spinning mill (mark)	27	41. 4	west of south
Baptist Church steeple	40	25. 4	west of south
Centenary Methodist Episcopal Church spire	54	24. 5	west of south
Cross on Catholic Church steeple	58	50. 7	west of south
Right edge of city standpipe	70	03. 7	west of south

South Paris, Oxford County.—The station is on land belonging to the county, in a pasture about 550 feet west from the courthouse. It is 36.2 feet from the west boundary fence, 70.5 feet from the stone wall which marks the south boundary. The station is marked by a bronze disk set in the top of a cement post 8 by 8 by 30 inches, projecting 5 inches above the ground. The following true bearings were determined:

	°	′	
Church spire on Paris Hill (mark)	19	44. 3	east of north
Spire of First Congregational Church	89	51. 9	east of south
Spire of Universalist Church	88	47. 5	east of south
Pinnacle on courthouse dome	79	07. 1	east of south
Vane on large barn 2 miles distant	53	54. 7	east of south

Van Buren, Aroostook County.—The station is in the western part of the town, on the grounds of St. Mary's College. It is about 600 feet west of the college buildings and about 320 feet from the grand stand in the athletic field, 26.8 feet from a wire fence to the southwest, and 47.3 feet from the center of a hedge to the northwest. The station is marked by a bronze disk set in the top of a cement post, 12 inches in diameter, and setting flush with the ground. The following true bearings were determined:

	°	′	
Pipe on reservoir hill (mark)	6	13. 9	east of south
North gable of shingle mill	85	28. 2	west of north
Vane on spire of St. Bruno Church	67	48. 6	east of north
Spire of white church (Canadian side)	62	08. 7	east of south

Wiscasset, Lincoln County.—The station is in the north part of the village on the high-school grounds, 355.7 feet a little west of south from the southeast corner of the high-school building, and northeast of a row of trees. The nearest tree, an ash, 14 inches in diameter, stands 71.9 feet to the southwest, and a larch stands 113.1 feet to the west. The station is marked by a bronze disk set in a concrete block, 8 by 8 by 30 inches, which is flush with the ground. The following true bearings were determined:

	°	′	
Steeple of white church across river (mark)	30	51. 6	east of south
Point on tower of Albee Hotel	28	27. 6	west of south
Southwest corner of high school	13	18. 4	east of north
Southeast corner of high school	23	02. 2	east of north

MARYLAND.

Oakland, Garrett County.—The station of 1897 was reoccupied. It is the south end of a meridian line established in that year by L. A. Bauer. It is in the grounds in front of the old courthouse, about 75 feet from the southwest corner, about 90 feet from northwest corner, and about 36 feet from the board walks on the south and west sides of the grounds. The station is marked by a granite post 7 by 7 inches, lettered S. M., 1897. There is another stone in the northwest corner of the courthouse grounds 82.5 feet due north of the magnetic station. The following true bearings were determined in 1916:

	°	′	
Southeast gable of Commercial Hotel (mark)	46	39. 8	west of north
Apex of tower on grammar school	37	40. 1	west of north
South gable of Jones' residence	11	31. 0	west of north
South corner of new courthouse	47	06. 5	west of south

MASSACHUSETTS.

Barnstable, Barnstable County.—Observations were made over the north one of three testing stones forming a true meridian placed there in 1870. The stones are on the property of Alfred Crocker, in a grass field, about one-half mile northeast of the courthouse. They are of granite, octagonal, about 1 foot in diameter, projecting 1 foot above the ground. Barnstable Light is 1.1 miles from the north stone. Each stone bears a bronze plate 6 inches in diameter, marked with a cross and cardinal points. The following true bearings were determined:

	° ′	
Barnstable Light (mark)	35 47.4	east of north
Iron water tower low on horizon	69 01.8	east of south
Spire of Unitarian Church	22 24.7	west of south
Southeast corner of refrigerating plant	69 35.0	west of south

Boston, Suffolk County.—The station of 1913 was reoccupied. It is on Castle Island, south of Fort Independence, about 50 feet northwest of the station of 1905. It is 143 paces from the south entrance to the fort and 6 feet west of a direct line from the south entrance of the fort to a large tank on a distant hill to the south. It is also 142 paces from the southeast corner of the fort, 153 paces from the southwest corner, and 63 paces from a small walk in a direct line to the south entrance. The station is marked by a limestone post 6 by 6 by 32 inches, projecting 1 inch above ground, and lettered U. S. C. & G. S., 1905. The following true bearings were determined in 1906:

	° ′	
Central flagpole on Marine Park head house (mark)	67 36.4	west of south
White spire in South Boston	81 40.6	west of south
Southwest corner of fort above stone foundation	18 02.5	west of north
Southeast corner of fort below top coping	38 23.5	east of north
Long Island lighthouse	80 56.4	east of south
Spectacle Island lighthouse	64 48.4	east of south

Fall River, Bristol County.—The station is about 2½ miles a little south of east (air line) from the city hall, and about one-half mile north of "The Narrows," on the east side of Watuppa reservoir, on city property in the reservoir preserve. It is about 15 feet from the shore and about 20 feet south of a line joining the gateway leading into the grounds and the spires of Notre Dame, 323 feet west of the bound stone placed west of the gate, and 292.7 feet from the first bound stone to the south. The station is marked by a granite post 6 by 6 by 24 inches, with a bronze disk set in the top, and projects 2 inches above the ground. The following true bearings were determined:

	° ′	
Pinnacle on roof of standpipe (mark)	49 30.6	west of north
Bound stone near reservation gate	81 19.9	east of south
Second bound stone	28 38.9	east of south
Middle cross on Notre Dame Church	77 56.2	west of north
North pinnacle on pumping station	39 11.1	west of north

Newburyport, Essex County.—Observations were made in the immediate vicinity of the station of 1905, but as it was only about 700 feet from a car line which disturbed the needle a new station was established on the west side of Plum Island, about two-thirds of a mile south of the electric-car line. It lies between the road and the river near some sand hills, 176.5 feet northwest of the northwest corner of the veranda of Meadow-view cottage and 75 feet from the river. A telephone pole stands 230 feet to the east. The station is marked by a bronze disk set in the top of a granite post, 7 by 7 by 30 inches, projecting 10 inches above the ground. The following true bearings were determined:

	° ′	
Pinnacle on Plum Island light (mark)	13 44.2	west of north
Butler's "Toothpick"	21 07.3	west of north
Congregational Church spire (Oldtown)	74 30.2	west of north
Gable of red cottage, one-fourth mile south	13 01.3	east of south
Northwest corner of Meadowview cottage	65 08.0	east of south

Provincetown, Barnstable County.—The old station could not be found; therefore a new station was established about one-eighth mile south of the old station. It is on the top of the ridge in the center of the old cemetery, 84.4 feet from the northwest corner of the Paine lot, 29.8 feet north of the headstone of Rev. Samuel Parker, 31.6 feet east from the headstone of Mr. Jonathan Nickerson. The station is marked by a bronze disk set in the top of a white marble post 6 by 6 by 24 inches, which sets flush with the ground. The following true bearings were determined:

	° ′	
Point on belfry of Bradford school (mark)	11 45.2	east of south
Steeple of Universalist Church	81 25.4	east of north
Tower on town hall	72 25.9	east of north
Southeast corner of base of Pilgrim monument	56 45.4	east of north
West side of base of city standpipe	7 05.9	east of north

MASSACHUSETTS—continued.

Taunton, Bristol County.—The station is about 3 miles southeast of the city hall, in a pasture belonging to Alonzo K. Crowell, on Stevens Street. It is about 500 feet west from his buildings and 51 feet south from a large hickory tree. A second hickory tree stands 64 feet northeast of the station. The station is marked by a bronze disk set in the top of a granite post 8 by 8 by 30 inches, projecting 3 inches above the ground. The following true bearings were determined:

	° ′
Weather vane on barn of A. K. Crowell (mark)	62 04.2 east of south
West edge of top of stack, Corr Mills	31 14.6 east of north
West gable of unpainted barn, property of Henry Shove	51 07.6 east of north
Southeast corner of white house of J. M. Davis	43 36.4 east of south

MISSISSIPPI.

Belzoni, Washington County.—The station is on land belonging to S. Castleman and Knotts, about 500 feet north from the cemetery, about 800 feet northeast from an Indian mound in the northeastern corner of Mr. Knotts' garden and about 1 mile east from the town's center. It is a short distance west from a water oak and a persimmon tree about 15 feet apart. It is 45.4 feet west from the center of the trunk of the persimmon tree and 47 feet southwest from the center of the trunk of the water oak. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk set in the top, which sets 1 inch above the ground. The following true bearings were determined:

	° ′
Top of town water tank (mark)	74 11.1 west of south
Top of negro church cupola	32 12.9 west of north
Southeast corner of Mr. Knott's house	52 46.4 west of south
Top of tombstone of Paul Tolar	12 27.5 east of south

Holly Springs, Marshall County.—The station of 1901 was reoccupied. It is about 2 miles from town on the grounds of Rust University. It is 236.5 feet and 212.7 feet, respectively, from the southeast and southwest corner of the main university building. It is marked by a stone post 6 inches square, projecting 3 inches above the surface of the ground. The following true bearings were determined in 1901 and 1916:

	° ′
Top of the water tower (mark)	3 09.4 east of south
Second church spire east of water tower	31 23.2 east of south
Lower southeast corner of main university building	5 12.9 east of north

Sumner, Tallahatchie County.—The station is in the northeastern part of the pasture owned by H. A. Ferguson, 450 feet a little west of north from his house and about 1½ miles southwest from the town's center. It is about 93 feet a little east of south from the northwest pasture fence and about 45 feet west from a cypress tree. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk set in the top, projecting 2 inches above the ground. The following true bearings were determined:

	° ′
Northwest corner of H. A. Ferguson's house (mark)	6 40.1 east of south
Main pipe of H. A. Ferguson's artesian well	2 06.5 east of south

A 3-inch cast-iron pipe about 30 inches long was set so that the top is about 2 inches above the ground to indicate the south end of a meridian line 393 feet long. File marks on the north and south sides of the pipe show the exact line.

Water Valley, Yalobusha County.—The station is in the southern part of the city park, about three-fourths mile north from the town's center. It is 108.2 feet northeast from the fence across the street to the south, 146.8 feet northeast from the northeast corner of the Christian Church, and 133.5 feet southwest from the circular cement basin of the park fountain. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk set in the top, projecting about 3 inches above the ground. The following true bearings were determined:

	° ′
Top of Baptist Church steeple (mark)	17 54.2 west of south
East cupola of Baptist Church	15 55.2 west of south
Top of Catholic Church steeple	31 32.6 west of south
Lower northwest corner of Christian Church	72 02.6 west of south

MISSOURI.

Bloomfield, Stoddard County.—The station of 1908 was reoccupied. It is in the southwest corner of the grounds surrounding the high school, about one-fourth mile west of the town's center. It is 114 feet north of the fence bounding the ground on the south and 126 feet east of the fence on the west. It is marked by a Bedford limestone post 6 by 6 by 32 inches, projecting about 8½ inches above the ground, and lettered U. S. C. & G. S., 1908. The following true bearings were determined in 1908 and 1916:

	° ′
Top of tallest cupola of grammar school (mark)	37 21.4 east of south
Top of water tank back of Barrett Hotel	78 18.4 east of south
Southwest corner of stone foundation of high-school building	85 39.0 east of south

MISSOURI—continued.

Ten auxiliary stations were also occupied. Station A is 250 feet east of the principal station. Station No. 1 is at the Hill school, about 150 feet a little east of north and across the road from the schoolhouse. It is about 3 miles a little west of south from Bloomfield. No. 2 is at West Antioch, in the southeast part of the school grounds, about 3½ miles west from Bloomfield. No. 3 is at Idalia, in the northern part of the school grounds, 4¼ miles a little south of east from Bloomfield. No. 4 is at Philadelphia, in the northeastern part of the school grounds, about 150 feet northwest from the church. It is 4½ miles a little west of north from Bloomfield. No. 5 is at Dexter, in the northeastern corner of the public school grounds, about one-fourth mile northeast from the town's center. It is 6½ miles south from Bloomfield. No. 6 is at the Scagg schoolhouse, in the northeastern corner of the school grounds, 7¾ miles southeast from Bloomfield. No. 7 is at Clines Island, in the center of a field on the north side of the school grounds, 7¾ miles east from Bloomfield. No. 8 is at Leora, in the west part of the field which is east across the road from the school grounds. It is 9 miles northwest from Bloomfield. No. 9 is in the town of Bernie, about one-fourth mile west from the town's center. It is in an open space about 230 feet northwest from the lodge hall which was formerly the Baptist Church. It is 15¼ miles south from Bloomfield.

Boonville, Cooper County.—The station is in the central part of Harley Park, near the top of a ridge extending east and west, about 1 mile west from the town's center. It is 53.7 feet north from a horizontal row of enameled brads about 3 feet above the ground in the trunk of a large tree, 75.2 feet a little north of east from a vertical row of enameled brads about 3 feet above the ground in the trunk of a large tree, and about 470 feet southwest from a small Indian mound on the east end of the ridge. It is marked by a limestone post 5 by 5 by 27 inches, with a bronze disk set in the top, projecting about 3 inches above the ground. The following true bearings were determined:

	° ′
Top of Evangelical Church steeple (mark)	81 46.1 east of north
Cross on Episcopal Church steeple	79 34.8 east of north
Top of the water tower at the training school	83 00.8 east of north
Top of the training-school cupola	83 30.5 east of north

Buffalo, Dallas County.—The station is in the northern part of a piece of ground known as the Reunion ground, at the south end of the street on the west side of the courthouse, and about one-fourth mile southeast from the town's center. It is 124.7 feet south from the north fence of the ground and 84.2 feet northwest from a rectangular blaze about 3 feet above the ground in the trunk of a large oak tree. A nail is driven above the blaze. It is marked by a rough limestone rock 3 by 5 by 16 inches, with a cross cut in the top, which projects about 1 inch above the ground. The following true bearings were determined:

	° ′
Top of courthouse cupola (mark)	3 07.1 west of north
Top of east gable of house at southeast corner where road on west side of courthouse meets Reunion ground	61 19.0 west of north
Southwest corner of Buffalo café under roof	3 27.6 west of north

California, Moniteau County.—The station is in the southwestern part of the infield within the race track at the county fair grounds, about three-fourths mile southeast from the town's center. It is 64 feet from the west fence on the inside of the race track, 124.8 feet from the south fence, 85 feet southwest from the southwest corner of a fence surrounding a pump, 211.3 feet southwest from the southeast corner of a small committee house in the infield. It is marked by a limestone post 5 by 7 by 26 inches, with a bronze disk set in the top, which projects about 1 inch above the ground. The following true bearings were determined:

	° ′
Top of German Evangelical Church (mark)	85 03.9 west of south
Top of town water tank	58 52.7 west of south
Top of gate house at the fair grounds	76 56.0 west of north
South gable of the poultry exhibition house	15 34.4 west of north

Carrollton, Carroll County.—The station is in the northwest corner of the city park, about three-fourths mile northwest from the town's center. It is 88.2 feet east from the west park fence and 144.3 feet south from the north park fence. It is marked by a limestone post 5 by 5 by 26 inches, with a bronze disk set in the top, projecting about 4 inches above the ground. The following true bearings were determined:

	° ′
South gable of a farmhouse (mark)	19 17.8 east of north
Upper northwest corner of the house across the road from the southeast corner of the park	51 57.4 east of south
Southeast edge of upper iron band of the brick kiln	40 04.5 west of south

Columbia, Boone County.—The station is in the northern part of the grounds of the State experimental farm, about 1 mile south of the town's center. It is in the second inclosed field south from the Rollins athletic field, on a hill about 1,500 feet south from the university gymnasium. It is 192 feet east from the west fence of the field, 290.5 feet a little east of south from the southeast corner of the fence surrounding the sixth hole of the university golf links, 44 feet a little south of east from the center of the trunk of a black walnut tree, and 125.5 feet west from the fence

MISSOURI—continued.

on the line between ranges 12 and 13. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk set in the top, projecting 7 inches above the ground. The following true bearings were determined:

	°	′	
South gable of university gymnasium (mark)	1	56.2	east of north
West gable of the university library	4	41.0	west of north
Top of tower of main university building	14	00.6	west of north
East gable of a fraternity building	48	08.9	west of north

Fulton, Callaway County.—The station is in the northwestern part of the athletic field of the Westminster College, about three-fourths mile northwest from the town's center and northwest from the football field. It is 108.5 feet east from the board fence on the west side of the grounds and 99 feet south from the board fence on the north side of the grounds. It is marked by a limestone post 5 by 7 by 24 inches, with a bronze disk set in the top, projecting about 1 inch above the ground. The following true bearings were determined:

	°	′	
South gable of a brown house (mark)	21	53.7	east of north
Center of northwest corner of south or main college building	58	18.0	east of south
Center of southwest corner of north college building	75	08.8	east of south

Hermitage, Hickory County.—The station is in the southeastern part of the infield within the race track at the old county fair grounds, about one-fourth mile southeast from the town's center. It is about 270 feet from the inside edge of the race track to the east and 159 feet from the same to the south. It is marked by a limestone post 5 by 5 by 24 inches, with a bronze disk set in the top, projecting about 3 inches above the ground. The following true bearings were determined:

	°	′	
Top of schoolhouse cupola (mark)	31	41.7	west of north
East gable of the Wilson Hotel	43	18.2	west of north
Top of a monument in cemetery	84	35.4	east of north

A rough field stone 7 by 8 inches by 1½ feet was set about 192 feet distant, with a cross in the top, projecting 1 inch above the ground, to mark the north end of a meridian line. It is 100 feet south from the north fence of the grounds and about 150 feet from the inside edge of the race track to the east.

Huntsville, Randolph County.—The station is in the northeastern part of the Radium Spring Park, about one-half mile southwest from the town's center. It is about 102 feet southwest from the northeast park fence, about 162 feet northeast from the southeast corner of the house in the park, and about 132 feet northwest from the nearest point of the park pavilion. It is marked by a limestone post 6 by 6 by 30 inches, with a bronze disk set in the top, projecting 6 inches above the ground. The following true bearings were determined:

	°	′	
Top of water tank of electric-light station (mark)	27	31.6	east of south
Top of town water tank	85	29.6	east of north
South gable of a white frame house	2	56.6	east of south

Jefferson City, Cole County.—The station is in the southwestern part of the infield within the race track at Houchin's Park, which is owned by J. A. Houchin, and is about 1½ miles south from the town's center. It is 101 feet northwest and 198.5 feet northeast from the inside fence of the race track. It is marked by a limestone post 5 by 7 by 30 inches, with a bronze disk set in the top, projecting about 5 inches above the ground. The following true bearings were determined:

	°	′	
Southwest gable of the carriage house (mark)	16	49.3	east of north
East lightning rod on largest stable	22	27.4	east of north
Top of band stand at the race track	4	23.2	west of north
Top of judge's stand at the race track	12	30.8	west of north

A limestone post about 444 feet distant with a cross in the top projecting about 5 inches above the ground marks the north end of a meridian line. It is 7.8 feet south from the fence on the inside of the race track and 84.6 feet northeast from the north corner of the band stand.

Kahoka, Clark County.—The station is near the southeast corner of the courthouse yard, one-fourth mile northeast of the town's center. It is 151.2 feet southeast of the southeast corner of the courthouse, 71.4 feet north of the cement walk across the street to the south, and 89 feet west of the cement walk across the street to the east. It is marked by a marble post 6 by 6 inches, projecting 6 inches above ground, and center marked by a United States Geological Survey bronze disk showing elevation. The following true bearings were determined:

	°	′	
Southwest corner of brick mill	12	16.3	east of north
Left edge of iron post at corner of Exchange Bank	89	59.0	west of north
Right edge of Exchange Bank	82	39.9	west of north
East gable of Presbyterian Church	65	10.4	west of north

A similar stone 297.1 feet to the north marks the true meridian. The north stone is 10 feet south of a row of posts and 6 feet north of a tree about on the meridian line.

MISSOURI—continued.

Kansas City, Jackson County.—The station of 1913 was reoccupied. It is on a low hill in the northern part of Swope Park, about 5 miles southeast from the town's center. It is about 350 feet north from the Missouri Pacific Railroad tracks, 358.5 feet east from the southeast corner of the stone wall above the bear cages, and 98 feet southwest from the center of the trunk of an oak tree. The station is marked by a marble post 6 by 6 by 33 inches, projecting about 6 inches above the ground, and lettered U. S. C. & G. S., with a small hole in the center to indicate the exact spot. The following true bearings were determined:

	° ′
Top of west tower of golf clubhouse (mark)	82 02.7 west of north
Top of east tower of golf clubhouse	80 37.5 west of north
Lower west edge of chimney on lion house	75 59.2 west of north
Center of top of tower on conservatory building	48 09.1 west of south

Auxiliary observations were made about 300 feet east from the principal station.

Kennett, Dunklin County.—The station is in the northwestern corner of the infield within the race track at the county fair grounds, about 1 mile south from the town's center. It is 79.9 feet south from the north side of the fence on the inside of the race track and 123.5 feet east from the curve at the northwest corner of the same fence. It is marked by a limestone post 7 by 5 by 33 inches, with a bronze disk set in the top, which projects about 3 inches above the ground. The following true bearings were determined:

	° ′
Top of town water tank (mark)	45 17.5 east of north
Upper southwest corner of Floral Hall, under eave of roof	16 19.2 east of south
South gable of a barn across the road to the north	21 29.8 east of north

A cement block 6 by 6 by 15 inches, with a cross cut in the top, setting flush with the ground, marks the south meridian point which is about 320 feet distant, 24 feet north from the inside fence of the race track, and 147.2 feet a little south of west from the center of a telephone pole about 0.9 foot in diameter.

Linn, Osage County.—The station is in the southeastern corner of the infield within the race track at the county fair grounds, about 1 mile southeast from the town's center. It is 91.7 feet northeast from the northeast corner of the judge's stand; 57.9 feet north from the inside fence of the race track; and 68.9 feet west from the fence. It is marked by a limestone post 5 by 7 by 27 inches, with a bronze disk set in the top, projecting about 2 inches above the ground. The following true bearings were determined:.

	° ′
Cross on Catholic Church steeple (mark)	40 22.7 west of north
Top of Methodist Episcopal Church steeple	43 49.7 west of north
South gable of largest barn in west end of fair grounds	77 27.4 west of north
East gable of grand stand	67 17.0 west of south

Linn Creek, Camden County.—The station is on the side of a hill east of the Moulder Hotel and near the southeast corner of the cemetery, about one-quarter mile southeast from the town's center. It is 54.2 feet south from the south cemetery fence and 11 feet southwest from the southeast corner of the cemetery. It is marked by a limestone post 5 by 5 by 26 inches, with a bronze disk set in the top, which is about 3 inches above the ground. The following true bearings were determined:

	° ′
Top of monument to Mrs. T. H. B. Moulder (mark)	89 23.1 west of south
Center of the Masonic sign on monument to Andrew L. Watson	77 09.1 west of south
Top of monument to Asa C. Ellis	70 26.9 west of north

Nine auxiliary stations were also occupied. Station No. 1 is in the northern part of Linn Creek baseball grounds, about one-half mile a little south of west from the principal station. No. 2 is at Damsel, in the center of an open space, about 300 feet northeast from the general store, and is about 4 miles northeast from the principal station. No. 3 is 1 mile southeast from the principal station, in the center of a fenced triangle of land, known as the Turn Table, at the southeast edge of Linn Creek, along the road to Hugo. No. 4 is about halfway between Linn Creek and Hugo in the southeastern part of an open space on the east side of the road and about 1 mile southeast from the Hall school. It is about 3½ miles southeast from the principal station. No. 5 is at Hugo, in an open space on the east side of the road to Linn Creek, and about 100 feet northwest from the schoolhouse. It is 7 miles southeast from the principal station. No. 6 is at Arnholt's Mill, in the western part of a pasture, about 300 feet southeast from the old mill building, on the north side of the road to Linn Creek, through an iron gate with concrete gate posts. It is 3½ miles a little south of west from the principal station. No. 7 is at Purvis, in the center of a field on the south side of the road to Linn Creek, about 400 feet southwest from the schoolhouse and across the road from an unoccupied store building. It is 6¾ miles northwest from the principal station. No. 8 is at Hahatonka, in the northwestern part of an orchard on the south side of the road to Linn Creek, about 500 feet southwest from the post office, and 6 miles south from the principal station. No. 9 is at Climax Springs, in the center of an open space on the west side of the road running south from town, about 150 feet east from the cement lined spring, and about 300 feet southeast from the Commercial Hotel. It is 25 miles west from the principal station.

MISSOURI—continued.

Marshall, Saline County.—The station is in the southwestern corner of the campus of the Missouri Valley College, about 1½ miles southeast from the town's center. It is 69.2 feet north and 206 feet east from the south and the west fence, respectively, of the campus. It is marked by a limestone post 5 by 5 by 27 inches, with a bronze disk set in the top, projecting about 3 inches above the ground. The following true bearings were determined:

	°	′	
South gable of main college building (mark)	17	45.0	east of north
Top of tower on main college building	15	34.4	east of north
Top of cupola on east end of main college building	19	31.1	east of north
Southwest corner of extreme top of the smokestack	32	49.2	east of north
Lower southeast corner of horse shed	47	24.1	east of north

A concrete post 7 by 4 by 30 inches, projecting 6 inches above the ground, with a cross cut in the top, and about 375 feet north and to the west of the tennis court, marks the north end of a meridian line.

Memphis, Scotland County. The station is near the southeast corner of the high-school grounds, one-quarter mile south of town's center. It is 119.7 feet southeast of the southeast corner of the high school; 161 feet southeast of the southwest corner; 101.5 feet south of the cement walk leading to the south end of the building; 29 feet northwest of the edge of the cut above the road. It is marked by a limestone post 6 by 8 inches, projecting 8 inches above ground, with United States Geological Survey bronze disk set in the top, showing elevation. The following true bearings were determined:

	°	′	
Right edge of house near north meridian stone	00	46.3	east of north
Northwest corner of house across street to east	55	48.5	east of south
Southwest corner of high school, second floor	47	05.4	west of north
Northeast corner of high school, second floor	22	39.0	west of north

A similar stone, center marked, sets 287.4 feet to the north, marking the meridian. It is 1 foot south of the fence north of the high school.

Mexico, Audrain County.—The station of 1908 was reoccupied. It is about three-quarters of a mile east of the public square, on the grounds of the Missouri Military Academy. It is 260.5 feet north from the northwest corner of the north dormitory; 52.6 feet west from the west fence of the football field; about 87.5 feet east from the southeast shore of the pond; and 123.9 feet north from the northwest corner of the gymnasium. It is marked by a stone 6 inches square on top, and is lettered U. S. C. & G. S. The following true bearings were determined in 1916:

	°	′	
East gable on roof of house at 1020 East Jackson Street (mark)	71	01.0	west of south
South gable of the house on the farm to the north side of the academy grounds	20	30.9	west of north
Point of west gable of annex for dormitory	44	06.0	east of north

A post was set about 182 feet from the principal station at the northeast corner of the pond and 4.65 feet west from the center of the trunk of a small tree to mark the north end of a meridian line. It is of concrete about 5 by 5 by 26 inches long, with a hole in the top to indicate the exact spot.

Auxiliary observations were made about 300 feet southwest from the principal station.

Montgomery City, Montgomery County.—The station is in the southwest corner of the piece of railroad land on the west side of the Wabash Railroad station, about one-fourth mile south from the town's center. It is 273.2 feet southwest from the south corner of the Wabash Railroad station, 79.1 feet northwest from the fence on the southeast side of the grounds, and 97.2 feet a little east of north from the northwest corner of the fence surrounding the lot on the southeast side of the grounds. It is marked by the neck of a quart glass jug, buried about 3 inches below the ground. The following true bearings were determined:

	°	′	
Lower southeast corner of Hanover Hotel (mark)	23	53.3	east of north
Top of steeple of a small white church	31	05.6	east of south
Upper northwest corner under rod of building on the corner southeast across the road from the Hanover Hotel	28	04.6	east of north
Lower southeast corner of Wabash Railroad station	46	16.4	east of north

Monticello, Lewis County.—The station is near the southeast corner of the courthouse square, near the town's center. It is 131.4 feet southeast of the southeast corner of the courthouse; 45.4 feet east of the cement walk leading south from the courthouse. It is marked by a cement post 14 inches in diameter and 40 inches long, projecting 2 inches above ground, with bronze disk in the top. The following ture bearings were determined:

	°	′	
Southeast corner of D. H. Leslie's store (mark)	3	24.8	east of north
Northwest corner of Masonic Hall	52	51.4	east of north
Southwest corner of George Woolridge's brick house	49	05.6	east of south
Southwest corner of courthouse foundation	46	37.6	west of north

A similar cement post, bearing a brass tube, sets 192.8 feet to the north and marks the true meridian. This north post is 67.8 feet northeast of the northeast corner of the courthouse and 22.6 feet south of the cement walk north of the courthouse square.

MISSOURI—continued.

New London, Ralls County.—The station is in the county fairgrounds, three-fourths mile south of the town's center. It is between the railroad and the race track southwest of the grand stand. The southeast side of the grand stand (produced) passes 5.8 feet south of the station. It is 65 feet southeast of the fence around the race track, 166.1 feet southwest of the grand stand, and 197.3 feet northwest of the fence along the St. Louis & Hannibal Railroad measured to a point near the west end of a large pond. The station is marked by a cement post 16 inches in diameter and 30 inches long, projecting 3 inches above the ground, and having a bronze disk set in the top. The following true bearings were determined:

	°	′	
Spire on cupola of barn east of fairgrounds (mark)	43	53.1	east of north
South gable of house near above barn	46	47.7	east of north
Spire on cupola of barn to southeast	57	56.2	east of south
East gable of a farmhouse three-fourths mile distant	49	53.5	west of south

Paris, Monroe County.—The station is near the center of the fairgrounds, one-half mile east of the town's center. It is in line with two large trees 48.6 feet and 92.4 feet north of the north and south tree, respectively, 146 paces south of the fence in front of the grand stand, 268 feet west of a long barn, 156 feet east of the old race track, and about 80 feet south of the smaller circular track. It is marked by a cement post 14 inches in diameter by 30 inches long, with bronze disk in top, which sets flush with the ground. The following true bearings were determined:

	°	′	
Flagpole at apex of courthouse tower (mark)	60	48.3	west of north
South gable of barn one-fourth mile east of fairgrounds	62	21.3	east of north
Flagpole on high-school cupola	80	42.0	west of south
Flagpole at apex of engine-house tower	79	16.9	west of north
Northeast corner of courthouse	58	59.7	west of north

Poplar Bluff, Butler County.—The station is in the northwestern part of the reservation for the new county fairgrounds, about 1¾ miles south from the town's center. It is 33.8 feet north from the trunk of a tree blazed on the west side and with three nails driven about 5 feet above the ground on the north side and marked B. M. 100.0. It is also 76.9 feet east from an iron pipe which marks the southwest corner of section 10. It is marked by a limestone post 7 by 5 by 30 inches, with a bronze disk set in the top, projecting about 4 inches above the ground. The following true bearings were determined:

	°	′	
Top of courthouse cupola (mark)	26	30.5	east of north
Center of top of smokestack of planing mill	31	22.4	east of north
Top of Iron Mountain Railroad water tank near the roundhouse	24	20.8	east of north
Northwest edge of railroad roundhouse under eave of roof	23	39.2	east of north

Potosi, Washington County.—The station of 1890 was found to be of no further use for magnetic observations as the new courthouse had been built directly over it. A new station was established in the northeastern corner of a pasture used as a baseball field and which at one time was part of the race track. It about is three-fourths mile northwest from the town's center, 97.3 feet west from the east boundary fence of the field, and 92 feet south from the north boundary fence. It is marked by the neck of a glass bottle which is inserted in a 4-inch earthen pipe 12 inches long buried one-half inch underground. The following true bearings were determined:

	°	′	
Upper southeast corner of first cement bridge south of baseball field (mark)	12	25.2	east of south
Vertical line of galvanized nails about 5 feet above the ground in the trunk of a tree about 117 feet southeast	25	30.6	east of south
Cross of galvanized nails about 5 feet above the ground in the trunk of an oak tree at the northeast corner of the field	29	39.1	east of north

Shelbyville, Shelby County.—The station is near the southeast corner of the high-school grounds, about one-fourth mile east of the center of town. It is 16.6 feet north of the cement walk in front of the school building, in line with a row of maple trees on the east side of the grounds and 35.9 feet south of the south tree, 92.4 feet southeast of the pump, 131.5 feet east of the southeast corner of the high school, and 163.4 feet east of the cement walk leading to the school building. It is marked by a round cement post 20 inches in diameter by 30 inches long, projecting 1 inch above ground, and having a bronze disk in the top. The following true bearings were determined:

	°	′	
West edge of west chimney on George Frazier's house (mark)	27	51.7	west of north
South gable of W. T. Dennett's house	16	56.8	east of north
North (large gable) of S. O. Robert's residence	24	35.3	west of south
East gable of R. Baker's residence	82	34.7	west of north
Southwest corner of high-school building (on bricks)	81	50.0	west of north

Stockton, Cedar County.—The station is in the northeastern corner of the pasture belonging to the county poor farm, about 1¾ miles southwest from the town's center. This pasture is the fourth field from the front yard of the brick building on the poor farm. It is 84 feet west from the northwest corner of the field to the southeast and 163

MISSOURI—continued.

feet south from the north pasture fence along the road to Stockton. It is marked by a limestone post 5 by 5 by 27 inches, with a bronze disk set in the top, which projects about 4 inches above the ground. The following true bearings were determined:

	°	′	
Upper northwest corner of brick building on county poor farm under roof (mark)	89	15.3	east of north
Upper southwest corner of wooden building on county poor farm under roof	86	33.9	east of south
East gable of a farmhouse	12	40.3	west of north

Troy, Lincoln County.—The station is in the fairgrounds, one-half mile south of the town's center. It is 178.3 feet southeast of the stone steps of the exhibition hall, 134.2 feet south of the southwest corner of the grand stand, 47.1 feet west of the fence around the track, and 225.6 feet east of a row of sheds. It is marked by a cement post 24 inches in diameter and 30 inches long, projecting 3 inches above ground, and having a bronze disk in the top. The following true bearings were determined:

	°	′	
Spire on courthouse dome (mark)	58	16.0	west of north
Southwest corner of Mr. Garrett's residence	41	15.3	east of north
South gable of Frank Clair's barn	86	38.5	east of north
South gable (at top) of W. R. Young's residence	87	34.5	west of south

A cement post 251.8 feet to the south marks the true meridian.

Tuscumbia, Miller County.—The station is in the north corner of the city park, about one-fifth mile south from the town's center. It is 75.6 feet from the near edge of the sidewalk on the northwest side of the park and 90 feet northwest from the southwest corner of an old cabin in the park. It is marked by a limestone post 5 by 5 by 27 inches, with a bronze disk set in the top, which projects about 5 inches above the ground. The following true bearings were determined:

	°	′	
South gable of John Roark's house (mark)	77	33.7	east of north
Top of Presbyterian Church steeple	34	46.7	east of north
Top of courthouse dome	22	06.8	east of north
Upper south corner of Tuscumbia Bank under top stones of roof	18	44.5	east of north

Union, Franklin County.—The station is in the northeastern part of the grounds of the new county poor farm, about three-fourths mile northwest from the town's center. It is 62.8 feet south from the north boundary fence of the grounds and 208.6 feet northwest from the northeast corner of the foundation of the poor-farm building. It is marked by a limestone post 5 by 7 by 30 inches, with a bronze disk set in the top, projecting about 6 inches above ground. The following true bearings were determined:

	°	′	
Top of Rock Island Railroad water tank (mark)	81	08.9	east of north
West gable of Rock Island Railroad depot	83	15.4	east of north
Lower southwest corner of Hambro factory of Hamilton Brown Shoe Co.	81	58.9	east of north
Lower northeast corner of foundation of county poor-farm building	38	25.0	east of south

University City, St. Louis County.—The station is in the southern part of the campus of the Washington University, about one-half mile southwest from the town's center. It is about 500 feet southeast from the southeast corner of the Graham Memorial Chapel, about 450 feet southwest from the southwest corner of the Ridgely Library and Law School, and about 160 feet north from the north curb of Forsythe Avenue. It is marked by a limestone post 5 by 7 by 28 inches, with a bronze disk set in the top, projecting about 5 inches above the ground. The following true bearings were determined:

	°	′	
Top of Catholic Cathedral dome (mark)	83	44.5	east of south
Base of flagstaff on south front tower of administration building	69	10.5	east of north
Top of southwest tower of Ridgely Library and Law School	58	00.8	east of north
Top of southwest tower of Graham Memorial Chapel	45	16.0	west of north

Versailles, Morgan County.—The station is in the southern part of a triangular plot of land belonging to the Rock Island Railroad, which lies northeast of the baseball grounds and between the Missouri Pacific and the Rock Island Railroad tracks, and is about one-fourth mile northwest from the town's center. It is 70 feet southeast from the fence on the southeast side of the main tracks of the Rock Island Railroad, 111.3 feet northeast from the northeast fence of the baseball grounds, and 119 feet southwest from the nearest rail of a sidetrack. It is marked by a limestone post 5 by 7 by 30 inches, with a bronze disk set in the top, projecting about 4 inches above the ground. The following true bearings were determined:

	°	′	
Lower southwest corner of Hunter & Hargett's feed and grain office (mark)	6	50.8	east of south
Top of courthouse cupola	31	31.7	east of south
Top of Christian Church steeple	88	58.3	east of south
Top of cupola in the center of the Christian Church roof	89	01.6	east of north

MISSOURI—continued.

Vienna, Maries County.—The station is in the southeastern corner of the lot south of the schoolhouse, about one-fourth mile south from the town's center. It is 53 feet north from the south boundary fence, 48 feet a little north of east from the center of a lone oak tree, and 136.3 feet southwest from the southeast corner of the school building. It is marked by a limestone post 5 by 7 by 27 inches, with a bronze disk set in the top, projecting about 6 inches above the ground. The following true bearings were determined:

	° ′
South gable of B. H. Otto's house (mark)	31 03.1 west of north
Base of cross on Catholic Church steeple	37 54.6 west of south
Upper northwest corner of Home Advertiser building under eave	17 17.1 west of south

Warrenton, Warren County.—The station is in the southeastern corner of the athletic field of the Central Wesleyan College, about one-fourth mile southeast from the town's center. It is 68 feet west from the east fence of the ground and 97 feet north from the south fence. It is marked by a limestone post 5 by 5 by 20 inches long, with a bronze disk set in the top, which is flush with the ground. The following true bearings were determined:

	° ′
Top of town water tank (mark)	61 40.5 west of north
Top of front cornice of Central Wesleyan Orphan's Home	19 31.9 east of north.
South gable of central barn of Central Wesleyan Orphan's Home	39 34.2 east of north.
Lower southeast corner of main college building	24 47.9 west of north

About 330 feet distant a second post 7 by 7 by 27 inches is set with the top about 3 inches above the ground to mark the north end of a meridian line. A hole in the top marks the exact spot.

Warsaw, Benton County.—The station is in the central part of the city park, near the southwest corner of the base-ball field, and about three-fourths mile northeast from the town's center. It is about 400 feet west from the east-park fence, 178.5 feet and 135.8 feet from two oak trees which bear W. 80° 27′.2 N. and E. 18° 18′.1 N., respectively. It is marked by a limestone post 5 by 5 by 27 inches, with a bronze disk set in the top, projecting about 4 inches above the ground. The following true bearings were determined:

	° ′
West gable of Galliker's corncrib (mark)	80 38.1 east of south
Cross of enameled brads about 4 feet above the ground in the trunk of an oak tree	80 27.2 west of north
Vertical line of enameled brads about 4 feet above the ground in the trunk of an oak tree	18 18.1 east of north

MONTANA.

Baker, Fallon County.—The station is about one-fourth mile southwest of the town's center, on a hill known as Lathom Heights. It is about midway between the crest of the hill and the ravine on the west and in line with the north side of the first street south of the slough. The station is not marked.

Four auxiliary stations were also occupied. Station A is 500 feet west of the primary station. No. 1 is 3¼ miles north and 1 mile east of the primary station. No. 2 is 2¾ miles south and 1 mile east of the primary station. No. 3 is 3½ miles west and one-fourth mile south of the primary station.

Browning, Teton County.—The station of 1906 was reoccupied. It is located a little to the west of north from cemetery (cemetery is about 2 miles north and west of town), and is 196.4 feet from the base of H. H. Arthur tombstone and 227.1 feet from the base of Therese Keizer tombstone. The station is marked by a sandstone rock, roughly cylindrical, 10 inches long by 5 inches in diameter. The rock is planted about flush with the surface of the ground and has a hole three-fourths of an inch in diameter and three-fourths of an inch deep drilled into it to mark the exact spot. Rocks are piled around marking stone for protection and to assist in finding it. The following true bearings were determined in 1906 and 1916:

	° ′
Center of railroad water tank (mark)	29 16.8 east of south
Flagpole on W. C. Broadwater's store	67 29.5 east of south
East dormer gable on old Indian school	58 47.8 west of south.
West gable of large Government building in Browning	72 53.3 east of south
Cross on Catholic Church spire	66 09.1 east of south
Apex of Mount Divide	67 20.2 west of north

Ten auxiliary stations were also occupied. Station A is 335.2 feet northwest of the primary station. Station B is 294.85 feet northeast of the primary station. Station No. 1 is 4 miles west and one-fourth mile south of town. No. 2 is 2 miles west and one-fourth mile south of town. No. 3 is 4.5 miles north and 1 mile east of town. No. 4 is 2 miles north and 1 mile east of town. No. 5 is 3.7 miles east of town. No. 6 is 1 mile east of town. No. 7 is 3.5 miles south of town. No. 8 is 1 mile south of town.

Columbus, Stillwater County.—The station is near the northeast corner of the high-school grounds, one-tenth mile northwest of the town's center. It is 10.1 feet west of the cement walk on the east side of the grounds, 91.4 feet south of the cement walk on the north side of the street north of the grounds, and 152.3 feet northeast of the northeast

MONTANA—continued.

corner of the school building. It is marked by a cement post 12 by 12 by 20 inches, setting flush with the gound, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	°	′	
Spire on Northern Pacific Railroad water tank (mark)	10	13.8	west of south
Spire on high-school cupola	63	59.4	west of south
Northwest corner of high school	75	47.7	west of south
Apex of ventilator on high-school annex	42	32.8	east of north
North gable of cottage near southeast corner of school grounds	20	21.9	west of south

Ekalaka, Fallon County.—The station is in the county fairgrounds, one-tenth mile northwest of the town's center. It is 66 feet west of the northwest corner of the grandstand, 66.5 feet west of its southwest corner, 43.5 feet northeast of the pump, 28 feet south of the edge of the race track, and 74 feet north of the fence back of the grand stand. It is marked by a sandstone post 6 by 12 by 12 inches, setting flush with the ground, and having a cross and drill hole in the center of the top. The following true bearings were determined:

	°	′	
Right edge of grain elevator (mark)	23	08.3	east of north
North gable of Fairview Hotel	87	40.6	east of north
North gable of farmhouse one-half mile distant	24	45.7	west of south
South gable of house near north end of fairgrounds	64	24.7	west of north
Chimney on cottage near bluffs	17	59.0	west of north

Glendive, Dawson County.—The station of 1906 could not be recovered; therefore a new station was established on the east side of the Northern Pacific hospital grounds, three-fourths mile northeast of the town's center. It is 105.2 feet east of the east corner of the hospital, 125.2 feet southeast of the southeast side of the pumping station, 42 feet west of the fence on the east side of the hedge, and 23.4 feet north of the road leading into the grounds from the east. The station is marked by a round cement post 12 inches in diameter and 30 inches long, projecting a little above the ground, and having a bronze disk countersunk in the top. The following true bearings were determined:

	°	′	
Spire on cupola of Dawson high school (mark)	24	54.0	west of south
Flagpole on courthouse cupola	33	36.1	west of south
Right edge of south cement gate post at cemetery	23	00.8	east of south
Iron flagpole on distant butte	1	51.7	east of south
Extreme south edge of portico of hospital, second floor	64	00.3	west of south

Libby, Lincoln County.—The station is near the southwest corner of the grade-school grounds, about one-fourth mile south of the center of town. It is 36.1 feet east of the low cement wall on the west side of the grounds, 36.7 feet north of a similar wall on the south side of the grounds, and 95.3 feet southwest of the southwest corner of the school building. It is marked by a round cement post 10 inches in diameter and 20 inches long with bronze disk countersunk in the top, and sets flush with the surface. The following true bearings were determined:

	°	′	
Flagpole on high-school cupola (mark)	7	04.1	west of north
South gable of Presbyterian Church	23	39.2	east of north
Southeast corner of grade-school foundation	88	13.8	east of north
Cross on Catholic Church spire	74	31.6	east of south
Methodist Episcopal Church spire	70	12.6	west of south

Livingston, Park County.—The station of 1910 was reoccupied. It is located in the Protestant cemetery 2 miles northwest of town, 11.8 feet northwest of the base of the Shadoan monument, and 59.2 feet south of the gate at the north side of the cemetery. It is marked by a marble slab about 3 by 6 by 20 inches, sunk level with the ground, and lettered U. S. C. & G. S. The following true bearings were determined in 1910 and 1916:

	°	′	
Tip of Watson monument (mark)	4	20.2	west of south
Center of windmill (leaning)	24	34.4	west of south
Left edge of upper part of the Short monument	60	55.3	west of south
South gable of Mr. Somerlad's ice house	16	11.2	west of north
Left edge of chimney on Albert Trager's house	29	32.3	east of south

The following stations are on the international boundary between the United States and Canada and are not marked.

Monument 276, Glacier Park.—The station is 21.7 feet east of the east edge of Monument No. 276 (aluminum bronze) and 15 feet west of the west bank of Waterton Lake. Auxiliary observations were made 300 feet west of Monument 276.

Monument 281, Glacier Park.—The station is 173 feet east of the east bank of the Belly River and 44 feet east of the middle of the road, and also about one-half mile east of Monument 281.

Monument 294, Teton County.—Auxiliary observations were made 200 feet west of Monument 294.

MONTANA—continued.

Monument 295, Teton County.—The station is 31 feet west of the west edge of Monument 295. Auxiliary observations were made on a ridge 250 feet southwest of primary station.

Monument 300–1, Teton County.—Auxiliary observations were made on the east edge of a big coulee west of Monument 301.

Monument 313, Teton County.—Auxiliary observations were made 125 feet east of Monument 313.

Monument 314, Teton County.—Auxiliary observations were made 27 feet east of Monument 314.

Monument 315, Teton County.—The station is 95 feet east of the edge of Monument 315. Auxiliary observations were made 400 feet west of primary station.

Monument 350, Toole County.—The station is 347.1 feet west of the west edge of Monument 350.

Monument 365, Hill County.—The station is 180.4 feet east of the east edge of Monument 365.

Monument 389, Hill County.—The station is 31.1 feet west of the west edge of Monument 389.

Monument 403, Hill County.—The station is 63.6 feet east of the east edge of Monument 403.

Monument 420, Blaine County.—The station is 57.45 feet east of the east side of Monument 420. Auxiliary observations were made 300 feet east of the primary station.

Monument 443, Blaine County.—The station is 211.25 feet east of the east edge of Monument 443. Auxiliary observations were made 310 feet east of the primary station.

Monument 461, Phillips County.—The station is 67.65 feet east of the east edge of Monument 461.

Monument 481, Phillips County.—The station is 22.95 feet east of the east edge of Monument 481.

Monument 496, Valley County.—The station is 308.8 feet east of the east side of Monument 496.

Monument 509, Valley County.—The station is 30.93 feet west of the west edge of Monument 509. Auxiliary observations were made 290 feet east of the primary station.

Monument 527, Valley County.—The station is 145.9 feet west of the west edge of Monument 527.

Monument 542, Sheridan County.—The station is 63.3 feet west of the west edge of Monument 542. Auxiliary observations were made 198 feet west of the primary station.

Monument 566, Sheridan County.—The station is 29.1 feet east of the east side of Monument 566.

Plentywood, Sheridan County.—The station is near the northwest corner of the high-school grounds, about one-eighth mile north of the town's center. It is 47.8 feet east of the west fence, 53.4 feet south of the north fence, and 155.6 feet northwest of the northwest corner of the school building. It is marked by a round cement post 12 inches in diameter and 16 inches long, set flush with the ground, and having a bronze disk countersunk in the top. The following true bearings were determined:

	°	′	
Ball at apex of elevated steel tank (mark)	76	38.1	east of north
Southwest corner of brick high school, second floor	1	52.3	west of south
Lutheran Church spire	6	23.0	west of south
Catholic Church spire	42	19.7	west of south
South gable of Lew Rue's residence	22	28.3	east of north

Sidney, Richland County.—The station is on the east side of the county hospital grounds, about one-eighth mile west of the town's center. It is in line with the southwest side of the hospital and 111.2 feet from its south corner, 34.2 feet southwest of the cement walk leading into the hospital, and 20 feet from the inner sidewalk line along the street in front of the grounds. It is marked by a round cement post 14 inches in diameter and 40 inches long, larger at the base, projecting 2 inches above the surface, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	°	′	
Cross on Catholic Church steeple (mark)	44	56.6	east of south
East dormer gable of distant farmhouse	44	18.3	west of south
Southwest gable of Turner's house	11	07.0	east of north
Left-hand pinnacle of church tower	21	26.7	east of north
Ball at apex of elevated steel tank	62	16.3	east of north

Sweetgrass, Toole County.—The station of 1906 was reoccupied. It is about one-half mile south of the center of town, just southwest of two large quartzite bowlders, and also about 400 feet southeast of a small coulee. It is 37.7 feet southwest of the highest point of the west bowlder, 42.4 feet southwest of the highest point of the east bowlder (points quite well defined), 82.2 feet west of a fence, and 1 foot east of a line joining the highest point of the west bowlder and the left edge of a near-by cottage produced. The west side of this cottage produced southward passes 24 feet to the east of the station. It is marked by a wooden post 2 by 4 by 20 inches, flush with the ground, and with a copper tack marking the position. The following true bearings were determined in 1906 and 1916:

	°	′	
Catholic Church spire in Couts (Canada) (mark)	21	29.2	west of north
Methodist Episcopal Church spire in Sweetgrass	17	17.4	west of north
Flagpole at south end of depot	8	35.6	east of north
Chimney on Jacob Jordan's cottage, one-fourth mile east of town	47	58.4	east of north
East gable of Bert Larkin's house, one-fourth mile southwest of town	68	22.0	west of north

MONTANA—continued.

Virginia City, Madison County.—The station is on the hill about one-fourth mile north of the courthouse. It is 633 feet west of the west cemetery fence, 200 feet east of the east side of the first street east of the courthouse, and 65 feet west of the west side of the second street east of the courthouse. It is marked by a round cement post 16 inches in diameter, larger at base, projecting 4 inches above the ground and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′
Center of small round window in north gable of courthouse (mark)	2 33.6 west of south
Southwest corner of public-school building	36 18.0 east of south
Apex of Elling's monument in cemetery	85 30.0 east of north
Right-hand apex of Words Peak	12 47.0 west of north
Flagpole on city hall cupola	8 08.7 west of south

Whitehall, Jefferson County.—The station is on a hill one-fourth mile northwest of the town's center. It is 40 feet south from a pasture fence and 400 feet east of a second fence. The station is not permanently marked.

Auxiliary observations were made 200 feet west of primary station.

Wibaux, Wibaux County.—The station is near the northeast corner of the high-school grounds, one-eighth mile northwest of the town's center. It is 156.5 feet from the northeast corner of the school building, 20.7 feet south of the row of trees on the north side of the grounds, 8.8 feet from the inner side of the walk on the east side of the grounds, and 105.4 feet north of the cement walk leading to the high school from the east. It is marked by a round concrete post 15 inches in diameter, larger at base, rounded on top, projecting 4 inches above the surface, with a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′
Pall at apex of elevated steel tank (mark)	1 24.0 east of south
Southeast corner of high school, second floor	43 42.7 west of south
West gable of Bauer's ranch house	68 17.2 east of north
Spire on Congregational Church tower	62 57.6 east of south
Apex of Northern Pacific Railroad water tank	59 52.3 east of south

Yellowstone, Gallatin County.—The station is on the west boundary line of Yellowstone Park, 100 feet north of the road leading into the park from Yellowstone, Mont., and 40 feet northwest of the northwest corner of the automobile checking station. It is not marked.

NEW HAMPSHIRE.

Chesterfield, Cheshire County.—The station is on the village green, 120 feet east of the main road, 44 feet north of a row of large maples, 190.5 feet from the base of a flagpole on the school grounds, and 313.5 feet south of the southwest corner of the town hall. The station is marked by a bronze disk set in the top of a concrete post, 12 by 12 by 30 inches, set flush with the ground. The following true bearings were determined:

	° ′
Base of rod on Baptist Church (mark)	5 21.8 east of north
Rod of vane on town hall	17 42.3 east of north
Apex of Presho monument in cemetery	49 41.8 east of north
Rod of weather vane on barn	2 35.3 west of south

A brass tube in a concrete post 357.5 feet to the north marks the true meridian.

Auxiliary observations were made over the Chesterfield station of 1890, which was 1 mile east of Factoryville, now known as Spofford. This station was found to be unsuitable for magnetic observations.

Hanover, Grafton County.—The station of 1905 was reoccupied. It is near the highest and most northern point of the golf grounds of the Hanover Country Club. A cherry tree is 72 feet from the station, bearing 26½° west of north. A pine tree (the northeast one of two adjacent pines) nearly in line with the cherry tree, is 104 feet away. The last elm tree of the row along the road bears 56° 6′ east of south. The station is marked by a marble post 6 by 6 by 50 inches, projecting 1 foot above the ground and lettered U. S. C. & G. S., 1905. The following true bearings were determined in 1905 and 1916:

	° ′
Top of roof on stone tower (mark)	2 55.2 west of south
Wind vane on Dartmouth Hall	9 57.4 west of south
Wind vane on College Church	17 25.2 west of south

Lancaster, Coos County.—The station is in the southeastern part of the new cemetery, one-fourth mile west of the town. It is 3 feet east of a road, 37.2 feet from the southwest corner of the Eaton monument, 50.6 feet from the northwest corner of the Ballard monument, and 37.9 feet from the southeast corner of the Jones monument. The station is marked by a bronze disk set in the top of a cement post 8 by 8 by 30 inches, flush with the ground. The following true bearings were determined:

	° ′
Spire of Methodist Church (mark)	59 43.4 west of south
Pinnacle on tower of B. & M. station	88 45.5 west of north
Southwest corner of foundation of Noyes monument	71 26.3 east of south

NEW HAMPSHIRE—continued.

Orford, Grafton County.—Observations were made on land owned by W. O. Carr, about 300 feet east of the river and 120 feet south of the road leading to the bridge which connects the towns of Orford and Fairlee. The station is unmarked.

Auxiliary observations were made at Fairlee in a pasture directly opposite the bridge and halfway up the hill leading to the cliffs.

Rochester, Strafford County.—The station of 1910 was reoccupied. It is two-thirds of a mile east of the town's center, near the center of a large meadow owned by Harry Weare, the exact location being known to Mr. Weare. It is 296.2 feet northeast of the east fence along the Boston & Maine Railroad, 200 paces southeast of a road and 60 feet from the edge of a stone pile. The station is marked by a granite bowlder, flat on top, and bearing a cross and half-inch drill hole. The following bearings were determined:

	° ′
Weather vane on George Trickey's house (mark)	2 30.8 east of south
Congregational Church spire	84 43.6 west of south
Methodist Church spire	88 11.7 west of north
Spire on Harry Weare's house	59 18.9 east of north

Six auxiliary stations were also occupied. Station A is about 250 feet from the principal station to the east and in line with the station and the steeple of the Methodist Church. Station B is about 300 feet to the west of the principal station and in line with the station and the steeple of the Methodist Church. Station No. 1 is about 4 miles north of the central square of the town on a hill a little west of the road leading to North Rochester. It is about 100 yards southeast of the residence of Charles McDuffee, in a pasture east of the road and about 50 feet from the road fence. No. 2 is on Dry Hill west of the town, 3.7 miles from the center square, a little less by air line. It is on the Tuttle farm, about 100 feet south of the house and 25 feet east of the wall on the east side of the road. No. 3 is 4 miles by road south of the center of the town, on a hill. It is opposite the house of Edgar Hamm, in a cart path, 70 feet north of the road. No. 4 is 2.1 miles by road east of the town's center, on the premises of John Quinlan, 50 feet north of the road and 65 feet west of the northwest corner of his house.

NEW MEXICO.

Gallup, McKinley County.—The station is about two-thirds mile northwest of the center of town in the open field on the west side of the cemetery at a point about 250 yards northeast of the Gibson pike. The west cemetery fence is about 225 feet east of it and the center of a rough wagon road running southwest from the cemetery is about 7 feet southeast of it. Two 1-inch holes are drilled in the large bowlder at the south end of the first ledge of rocks west of the cemetery. This bowlder is 102 feet from the station and the upper hole, which is about 5 feet above ground, bears N. 33° 00′ W. from the station. The station is marked by a sandstone post, 6 by 8 by 30 inches, projecting a few inches above ground and having a bronze disk set in the top. The following true bearings were determined:

	° ′
Apex of east water tank on distant hill (mark)	22 41.3 east of south
West water tank	22 17.4 east of south
East side of smokestack at power plant	0 07.0 east of south
Upper west corner of monument (brownstone) marked "Garman"	63 06.3 east of north
Lower southeast corner of wall around Kuzma lot	46 04.9 east of north

Taos, Taos County.—The station is about one-fourth mile east of the center of the town in the southwest corner of the public-school grounds. It is 34 feet from the south fence, 30.7 feet from the west fence, 117.5 feet from the east fence, and 44.7 feet from the lone tree near the south fence. The station is marked by a 75-pound bowlder with its top a little above ground and having a one-half-inch hole drilled 1 inch deep to mark the exact spot. The following true bearings were determined:

	° ′
East gable of residence one-fourth mile distant (mark)	65 58.5 west of north
North gable of a church	61 18.7 west of north
Southeast corner of schoolhouse	32 49.8 east of north
Point on mountain 18 minutes (of arc) west of highest point	38 40.3 east of north
South gable of house 200 yards distant	69 00.4 east of north

NEW YORK.

Dannemora, Clinton County.—The station of 1907 was approximately reoccupied. It is in the northwest corner of the grounds of the Clinton penitentiary at Dannemora and north of the ice house standing near the northwest corner of the prison. It is about 1,000 feet northwest of the prison, 77.8 feet south of wooden fence at the north, 84.3 feet from a wooden fence at the west, and 54.9 feet east of the rock work on the east side of the road leading to the new sanitarium. The station is unmarked.

Five auxiliary stations were also occupied. Station A is 75 feet north of the principal station. No. 1 is on the Rand Hill Road 5.7 miles from town (by road) in a general east-northeastern direction. It is in a pasture belonging to Mr. Le Faver, on the north side of the road, and about 50 feet back from the bars. No. 2 is in Cadyville, on the

NEW YORK—continued.

property of the Catholic Church, in a field back of the priest's house, 80 feet east of a small pavilion and 30 feet north of a row of small poplar trees. No. 3 is 6.2 miles south and a little west of Dannemora, in the village of Saranac. It is in a grass field belonging to Martin Ahern and 100 feet north of his barn. No. 4 is 3.8 miles northwest of the village, on the school grounds at Ledgers Corners, about 40 feet northeast of the flagpole.

De Ruyter, Madison County.—The station is in the fair grounds, about 900 feet north of the railroad. It is in line with the east side of the Women's Christian Temperance Union building and 250 feet north of it, and about 175 feet south of the inside of the race track. The station is not marked.

Auxiliary observations were made 165 feet north of the principal station.

Faust, Franklin County.—The station is a little less than a mile west of the railroad station, in a vacant lot south of the road and west of the Catholic cemetery. The exact spot is 38.8 feet west of the west boundary fence of the cemetery and 88.5 feet southwest from the northwest corner post of this same fence. The station is unmarked.

Four auxiliary stations were also occupied. Station No. 1 is south of Tupper Lake, in a grass field 200 feet south of the road at a turn in the road and in line with the road running north across the marsh. It is 3.9 miles by road from Faust. Station No. 2 is 5.5 miles by road from the principal station on the road to Wawbeek. It is in a field 50 feet east of the road and 100 feet north of the house of R. A. Shene. Station No. 3 is 4 miles due west of the principal station, about 4 feet from the pitcher's box on the baseball field at Piercefield. Station No. 4 is at Kildare, 7 miles by rail from Faust, west of the depot, in the brush at a point about 350 feet from the railroad.

Inman, Franklin County.—The station is about 375 feet north of the Delaware & Hudson tracks, in a piece of brush land, a little east of north of the passenger station. The station is unmarked.

Auxiliary observations were also made at four stations. Station A is 85 feet northeast of the primary station. No. 1 is on the grounds of the Loon Lake Hotel, about 3 miles southeast of Inman. It is about 200 feet south of the cow stables and 40 feet west of the oiled road, near a group of large pines. No. 2 is on a ridge near Duck pond, 3.2 miles northwest of Inman and 75 feet north of the road leading to Duane. No. 3 is 4.2 miles a little west of south from Inman, on the shore of Lake Kushaqua, 50 feet back from the water and above a bathing place and springboard, a little south of some cottages on the shore.

Ithaca, Tompkins County.—Observations were taken at a point about 60 feet west of the station of 1909, which was within 40 feet of the iron gate.. The exact point was 85.1 feet east of the retaining wall of the upper level, 98.1 feet southwest of the concrete wall to the north of the gate, and 96.6 feet northwest of the wall to the south of the gate. On account of the large amount of iron in the vicinity it was deemed best to establish a new station. It is one-third mile north and one-half mile east of the old station, on a gravel knoll in the cow pasture north of the dairy barns and east of the heating plant of the College of Agriculture. The pasture contains several ridges. The station is located on the first ridge north of the dairy barns. It is marked by a bronze disk set in the top of a cement block 12 by 12 by 30 inches, projecting 4 inches above the ground. The following true bearings were determined:

	°	′	
Flagpole on dairy barn (mark)	26	59.9	east of south
North edge of north tower of ladies' dormitory	40	26.9	east of north
Tower of library	6	50.2	east of north
Tower of Sage College	3	00.3	west of north
North ventilator of animal industry building	57	26.3	west of north

Ovid, Seneca County.—The station is about 200 or 300 yards southeast of the courthouse, on a plat of ground belonging to the State, and containing a spring which furnishes the water for the village waterworks. It is about 25 feet north of the spring, 42.7 feet southeast of a large cottonwood tree, 34 feet northeast of a small elm 6 inches in diameter. The station is marked by a bronze disk set in a concrete post 8 by 8 by 34 inches, projecting 4 inches above the ground. The following true bearings were determined:

	°	′	
Vane on courthouse (mark)	22	45.4	west of north
Ball on standpipe back of courthouse	20	42.5	west of north
Cross on Catholic Church	61	44.1	west of south

Port Kent, Essex County.—The station is south of the village on the level ground back from the railroad in a brush-grown pasture about 500 feet south from the railroad station and about 400 feet from the tracks. The station is unmarked.

Wampsville, Madison County.—The station is in a pasture on the brow of a hill overlooking the State road and near a gravel pit, on property belonging to A. A. Moore, about one-third of a mile south of the electric road. It is 7 feet from the edge of the hill, 11.5 feet east of a fence, and 163.5 feet northeast of a large hickory tree. The station is marked by a bronze disk in the top of a cement post, 8 by 8 by 30 inches, projecting 5 inches above the ground. The following true bearings were determined:

	°	′	
Ball on roof of courthouse standpipe (mark)	31	23.6	west of north
Point on roof of silo	80	53.6	east of north
Flagpole on courthouse	32	43.6	west of north
Vane on Presbyterian Church	76	32.1	west of north

NORTH CAROLINA.

Chapel Hill, Orange County.—The station of 1906 was reoccupied, but owing to the proximity of a brick building which was reinforced with steel beams a new station was established in the northeastern part of the grounds of the University of North Carolina, about one-fourth mile east from the town's center. It is 206 feet from the south meridian stone established in 1898 and in line with the southeast corner of the geological building, 242.5 feet northeast from the southeast corner of Davie Hall, and 160.7 feet from the stone boundary wall to the east. It is marked by two pint glass bottles, one over the top of the other, buried 2 inches under the ground. The following true bearings were determined.

	° ′
South stone of old meridian line (mark)	59 27.3 west of south
Lower northeast corner of Davie Hall	53 07.7 west of south
Center of northeast corner of Caldwell Hall	12 17.9 west of south
Center of southwest corner of chemistry building	78 19.7 west of south

Halifax, Halifax County.—Observations were made over the south meridian stone established in 1899, but, owing to the proximity of iron in the vicinity, a new station was established in the southeastern part of the lot known as the grounds of the old Jones house. It is about one-half mile southwest from the town's center, 176 feet a little north of west from the west track of the Atlantic Coast Line Railroad, 37.3 feet north from the boundary line to the south, and 76 feet northwest from the center of the trunk of a large white-oak tree at the south end of the grove. It is marked by a slab of marble 1 by 8 by 15 inches, which rests on a marble base and projects about 1 inch above the ground. A cross in the top indicates the exact spot. The following true bearings were determined:

	° ′
West gable of a sheet-iron storehouse on east side of railroad track south of depot (mark)	21 35.8 east of north
Upper southwest corner of R. E. Daniel's house under eave of roof	77 52.6 east of north
Top of semaphore pole on east side of railroad track	4 50.5 west of south
Top of warning sign post at the railroad crossing	58 07.8 east of north

Morganton, Burke County.—The station of 1906 was reoccupied, but, owing to the proximity of the county jail, a new station was established about 1 mile to the southwest. It is in the southeastern part of the grounds of the North Carolina School for the Deaf, north of the superintendent's house, and about 1 mile southwest from the town's center. It is 214.4 feet northwest from the northeast corner of the front piazza of the superintendent's house and 226.8 feet northeast from the northwest corner of the piazza. It is marked by a cement monument 12 by 12 by 30 inches, projecting 6 inches above the ground, with a bronze disk set in the rounded top. The following true bearings were determined:

	° ′
Top of water tank at State asylum for the insane (mark)	79 13.0 east of south
Top of second cupola east of water tank at insane asylum	80 11.8 east of south
Top of fourth cupola east of water tank	81 01.1 east of south
Central west gable of Goodwin Hall	68 00.2 east of north
Top of Methodist Episcopal South Church steeple	1 24.0 west of north
Tip of cupola over office of school	85 22.4 west of south

An iron rod was set 600 feet distant to mark the north end of a meridian line.

Auxiliary observations were made about 500 feet southeast of the old station.

Salisbury, Rowan County.—The station of 1905 was reoccupied. It is in Chestnut Hill Cemetery, 17.7 feet due south of the south meridian stone. As this locality was not well suited for a magnetic station, a new station was established at the county fair grounds, about 1½ miles northwest of the town's center. It is in the southern part of the infield within the race track, 131 feet north from the fence surrounding the infield and 309 feet southeast from the nearest point of the judge's stand. It is marked by a marble post 6 by 4 by 26 inches, with a bronze disk set in the top, projecting 2 inches above the ground. The following true bearings were determined:

	° ′
Top of First Baptist Church steeple (mark)	36 49.0 east of south
Top of belfry of public school	18 00.1 east of south
Top of the east cupola on a church tower	7 39.2 east of south
Upper southeast corner of tower of the new school for girls	28 59.7 east of north
Top of south cupola of the main exhibition building	14 15.2 west of north

Auxiliary observations were made about 270 feet south of the primary station on the meridian line.

NORTH DAKOTA.

Amidon, Slope County.—The station is near the southwest corner of the school grounds, one-fourth mile west of the town's center. It is in line with the south side of the school building and 149 feet west of the southwest corner of the high-school annex, 55.5 feet north of the fence on the south side of the grounds, and 47 feet east of the fence on

NORTH DAKOTA—continued.

the west side. It is marked by a round concrete post, rounded on top, 18 inches in diameter by 24 inches long, larger at the base, projecting 3 inches above the surface, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′
North gable of Mr. Gillett's house (mark)	21 03.5 east of south
Chimney on west house of Farm Land & Coal Co	82 32.1 west of north
West gable of Mr. McCutcheon's house	23 32.8 east of north
Southeast corner of hotel	75 41.8 east of north
West gable of Mr. Hebal's residence	76 23.2 east of south

Beach, Golden Valley County.—The station is near the southeast corner of the high-school grounds, one-half mile north of the town's center. It is 6.3 feet north of the row of trees on the south side of the grounds; 42.8 feet west of the row of trees on the east side; 134 feet southeast of the southeast corner of the school building; and 87 feet south of the south side of the building produced eastward. It is marked by a round concrete post 15 inches in diameter and 30 inches long, rounded on top, larger at the base, projecting 3 inches above the surface, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′
Apex of elevated steel water tank (mark)	5 04.4 west of south
Southwest corner of high school, second floor	67 12.1 west of north
West gable of distant farmhouse	32 02.2 east of north
North gable of J. R. Smith Co.'s elevator	40 26.3 east of south
Cross on Catholic Church tower	9 09.6 east of south

Bowbells, Burke County.—The station is near the south corner of the ball park, about one-eighth mile south of the town's center. It is 35.9 feet northeast of the southwest fence; 90.6 feet northwest of the southeast fence; 97.4 feet from the south corner; and about in line with a rail fence extending south from the grand stand. It is marked by a round cement post 14 inches in diameter and 18 inches long, projecting 2 inches above ground, and having a bronze disk in the top. The following true bearings were determined:

	° ′
Ball at apex of steel water tank (mark)	10 32.1 west of north
South gable of residence near tank	3 53.2 west of north
West gable of residence east of ball park	54 30.9 east of south
Church spire	20 08.6 west of north
West gable of grain elevator	22 05.6 east of north

Bowman, Bowman County.—The station is on the south side of the courthouse square near the town's center. It is 95.5 feet southwest of the southwest corner of the courthouse; 55.8 feet west of the cement walk leading to the courthouse from the street; and 37.3 feet north of the cement walk on the north side of the street south of the courthouse square. It is marked by a round concrete post, rounded on top, 15 inches in diameter, 30 inches long, projecting 4 inches above the ground and having a bronze disk countersunk in the top. The following true bearings were determined:

	° ′
Lutheran Church spire (mark)	2 45.1 west of south
Southeast corner of high school building, third floor	29 10.9 west of south
Apex of elevated steel tank	76 36.5 west of south
Northwest corner of courthouse, second floor	14 05.8 east of north
South gable of Western Grain Co.'s elevator	78 17.6 east of north

Cavalier, Pembina County.—The station is in the ball park, one-fourth mile south of the town's center. It is 36.5 feet south of the board fence on the north side of the park; 234.4 feet east of the board fence on the west side; 222 feet west of the fence on the east side; 156 feet west of the west corner of the grand stand. It is marked by a cement post 12 by 12 by 24 inches, projecting 1 inch above ground, and has a bronze disk in the top. The following true bearings were determined:

	° ′
Cupola on distant barn (mark)	10 06.6 east of south
Right edge of brick chimney on county jail	43 53.4 west of north
Northeast corner of courthouse	34 47.9 west of north
Cross on church spire	8 18.0 west of north
South gable of house near ball park	36 17.6 east of north

Fort Yates, Sioux County.—The station is near the northeast corner of the hospital grounds near the center of town. It is 224.5 feet north of the north side of the west wing of the hospital; 46.5 feet south of the fence along the north side of the grounds; and 113 feet west of the cement walk along the east side. It is marked by a round concrete post, rounded on top, 15 inches in diameter, 30 inches long, projecting 5 inches above ground, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

NORTH DAKOTA—continued.

	°	′	
Catholic Church spire (mark)	35	02.4	west of north
Apex of south ventilator on dormitory	24	31.0	west of north
South gable of United States post building	2	06.3	east of north
Left edge of cement pier at northeast corner of hospital veranda	17	21.9	east of south
Left edge of east chimney on United States building northwest of hospital	87	29.2	west of south

Leith, Morton County.—The station is on the prairie, about one-eighth mile north of the town's center, in line with the north side of the high school, 650 feet east of its northeast corner; also in line with the east side of the Pioneer Hotel and 700 feet north of its northeast corner. It is not marked.

The following stations are on the international boundary between the United States and Canada and are not marked:

Monument 583, Divide County.—The station is on a hill 365.4 feet east of Monument 583. Auxiliary observations were made 200 feet east of the primary station.

Monument 601, Divide County.—The station is 100 feet east of Monument 601.

Monument 613, Divide County.—The station is 64 feet west of Monument 613.

Monument 629, Burke County.—The station is 42.9 feet west of Monument 629.

Monument 641, Burke County.—The station is 461.2 feet east of Monument 641.

Monument 661, Renville County.—The station is 111.2 feet west of Monument 661. Auxiliary observations were made 200 feet west of the primary station.

Monument 680, Bottineau County.—The station is 56.8 feet east of Monument 680.

Monument 696, Bottineau County.—The station is 36 feet west of Monument 696.

Monument 712, Rollette County.—The station is 59.9 feet east of Monument 712. It is on a hill between two coulees.

Monument 733, Towner County.—The station is 105.5 feet east of Monument 733.

Monument 755, Cavalier County.—The station is 83.2 feet west of Monument 755.

Monument 776, Cavalier County.—The station is 109 feet east of Monument 776.

Mott, Hettinger County.—The station is near the southwest corner of the high-school grounds, one-fourth mile east of the town's center. It is in line with the west side of the school building and 81.4 feet south of its southwest corner, 131.3 feet southwest of its southeast corner, and 24.8 feet north of the outer row of trees on the south side of the grounds. It is marked by a round concrete post, rounded on top, 15 inches in diameter by 24 inches long, larger at the base, projecting 2 inches above the surface, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	°	′	
Right edge of top of brick smokestack at power plant (mark)	75	24.5	west of south
East gable of Milwaukee depot	80	08.1	west of south
Southeast corner of high school near ground	51	40.2	east of north
Northwest corner of cottage just east of high school	83	02.4	east of north
East gable of Mr. Banning's farmhouse	33	05.1	west of south

Shields, Morton County.—The station is on the school grounds near the town's center. It is 125 feet west of the northwest corner of the school building and 145 feet south of the fence along the north side of the grounds. It is not marked.

OHIO.

Cincinnati, Hamilton County.—The station of 1907 was found to be of no further use for magnetic observations. A new station was established about one-third mile due north of the old station in Burnett Wood Park, near the east boundary, between Lakewood Avenue and Nixon Street. It is on the ridge rising from the west side of the lake north of the park stables, about 250 feet south of the fork in the roads (measured from the south side of the road at the bottom of the hill), and in line with the upper or northwest side of the lake. It is in a clearing 37.5 feet from the middle point of twin trees on the east and 29.5 feet from a prominent tree on the northwest. The spot is marked by a marble post 6 by 6 by 28 inches, with a bronze disk set in the top, and projects about 2 inches above ground. The following true bearings were determined:

	°	′	
Cupola on residence near north entrance to park (mark)	7	16.1	east of north
South side of water tank at ice plant	50	43.5	east of south
Southeast spire on St. George's Church	15	08.9	east of south
East gable of building one-third mile distant	81	02.9	west of north
South gable of house on driveway 300 yards distant	46	48.6	east of north

Auxiliary observations were made in the vicinity of the 1907 station.

PORTO RICO.

Mayaguez.—The station of 1909 has been destroyed. A new station was established about 25 feet from the old station on a small plateau about 30 feet above sea level surrounded on two sides by a grove of cocoa palms about 2 miles from the playa of Mayaguez. The old station was 17 feet from the southernmost of two small mango trees toward the railroad track. It is marked by a concrete block about 1 foot square, projecting 4 inches above the ground. The following true bearing was determined:

	° ′
Range light west of the end of old iron pier (mark)	35 44.5 east of south

Ponce.—The station of 1901 has been destroyed. A new station was established on property known as the Castellana, about 50 feet east of the old station, on the highest point of a shoulder of a hill about one mile north of the plaza of Ponce, and on a continuation of the street on the west side of the Plaza Principal. It is 54 feet from the northwest corner and 61 feet from the northeast corner of a concrete water tank. It is marked by a bottle set in the ground with the neck projecting about one-fourth inch above the ground. The following true bearings were determined:

	° ′
Cardona Light (mark)	13 20.4 west of south
Muertos Light	34 41.5 east of south
South side of larger of two chimneys in line with each other	67 37.0 east of south

San Juan South Base.—The station of 1909 was found to be of no further use for magnetic observations, therefore a new station was established about 150 feet southeast of the triangulation station South Base on the Catans side of San Juan Harbor, slightly south of a line connecting the White Range light and the western wireless tower. It is marked by a concrete block with a drill hole in the center lettered U. S. C. & G. S., 1905. The following true bearings were determined:

	° ′
Morro Light (mark)	36 23.0 east of north
Church spire on dome	54 56.7 east of north
Tower of railroad station	63 11.7 east of north
Taller tower on new Catholic school	79 01.8 east of north

RHODE ISLAND.

Kingston, Washington County.—The station of 1910 was reoccupied. It is on the grounds of the Rhode Island Agricultural College, on the open square south of Lippitt Hall. It is 236.3 feet east of the northeast corner of the dormitory and 175 feet southwest of the flagpole. The station is marked by a marble post 10 by 10 by 30 inches, set about 2 inches below the level of the ground, and lettered U. S. C. S. A one-half inch hole in the center marks the exact spot. The following true bearings were determined in 1904 and 1916:

	° ′
Dairy barn weather vane (mark)	14 42.5 west of north
Cupola on library building	15 22.2 east of south
Boarding hall lightning rod	66 31.8 west of south
Cap of north tower Davis Hall	82 52.2 west of north
Experiment station weather vane	39 10.5 west of north

A second stone marking a meridian line was set 290 feet south of the station and 51.3 feet slightly southeast of a tree. This stone is of granite, 7 by 7 by 36 inches, set flush with the ground, and unlettered. It has a 1-inch hole about 2 inches deep in the center of top, which bears 0° 02.′6 west of south from the magnetic station.

Providence, Providence County.—The station of 1910 was reoccupied. It is on city property on the grounds of the Sockanosset reservoir, about 5 miles (air line) southwest of city hall. It is in a pasture south of the center of the reservoir, and about 125 yards west from a house where the gatekeeper lives, and about 120 yards from the nearest wall of the reservoir. It is 36.4 feet from a wire fence on the north side and 47.1 feet due east of an oak tree. It is also 61.3 feet due west of an ash tree. A second stone marking a meridian line was set 251.7 feet due south of the station. This stone is 18.1 feet northeast of an ash tree and 188.7 feet from the south wall of a pasture. The stones are each 4 feet long, 12 inches square at bottom, and 6 inches square at top, set flush with the ground, and lettered U. S. C. S. A small hole 1½ inches deep marks the exact spot. The following true bearings were determined in 1910 and 1916:

	° ′
Tower main hall Rhode Island School for Boys	37 53.7 west of south
Chapel at Sockanosset school	48 51. 5 west of south

SOUTH DAKOTA.

Dupree, Ziebach County.—The station is near the southeast corner of the high-school grounds, about one-fourth mile southeast of the town's center. It is 172.6 feet southeast of the southeast corner of the school building; 152 feet south of the south side produced, 82 feet east of the east side produced; and 98 feet north of the fence on the south side of the street. It is marked by a round concrete post, rounded on top, 18 inches in diameter, larger at base, 30

SOUTH DAKOTA—continued.

inches long, projecting 4 inches above ground, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′	
North gable of O. J. Gage's farmhouse (mark)	8 52.9	east of south
East gable of O. S. Geesey's residence	83 45.4	west of north
Northeast corner of high-school foundation	24 38.3	west of north
Southeast corner of W. Scott's residence	7 05.6	east of north
South gable of farmhouse 2 miles distant	53 42.8	east of north

Huron, Beadle County.—The station of 1911 was reoccupied. It is near the southwest corner of the courthouse yard, one-fourth mile west of the town's center. It is 174.2 feet southwest of the southwest corner of the courthouse; 51.75 feet east of the cement walk on the west side of the square; 7.15 feet north of the cement walk on the south side. It is marked by a square sandstone post 24 by 24 inches at base, tapering to 12 by 12 inches at top, lettered U. S. C. & G. S. 1890, center marked, projecting 12 inches above the ground. The following true bearings were determined in 1911 and 1916:

	° ′	
North meridian stone (mark)	00 03.1	west of north
Southeast corner of courthouse	45 47.2	east of north

A similar stone 338.5 feet to the north marks the meridian.

La Plant, Dewey County.—The station is on the prairie north of the depot. It is about in line with the west side of the depot and 600 feet north of its north side. It is not marked.

McLaughlin, Carson County.—The station is on the hill just north of the railroad and one-fourth mile north of the town's center. It is 600 feet east of the road to Fort Yates, 60 feet south of a fence, and 250 feet west of a fence corner. It is not marked.

Mound City, Campbell County.—The station is near the southwest corner of the courthouse square near the center of town. It is 58.2 feet southwest of the southwest corner of the courthouse, 21.4 feet north of the fence on the south side of the grounds; 20.2 feet east of the fence on the west side, and 28.6 feet from the fence corner to the southwest. It is marked by a round concrete post, rounded on top, 12 inches in diameter by 30 inches long, larger at the base, projecting 4 inches above ground, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′	
Methodist Episcopal Church spire (mark)	59 10.0	west of south
South gable of Mr. Larson's residence	66 14.8	west of north
Cross on Lutheran Church spire	89 42.6	east of north
Northwest corner of cottage 2 miles distant (in line with cemetery)	47 35.4	east of south
Southeast corner of hotel	9 26.0	west of south

Timber Lake, Dewey County.—The station is near the southwest corner of the high-school grounds, about one-tenth mile west of the town's center. It is 131.7 feet southwest of the southwest corner of the school building, 42.6 feet north of the outside row of trees south of the grounds, 51 feet east of the outside row of trees on the west side, and 66.2 feet from the tree at the southwest corner of the grounds. It is marked by a round concrete post, rounded on top, 12 inches in diameter by 30 inches long, larger at the base, projecting 2 inches above ground, and having a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′	
South gable of Simonson & Honson's elevator (mark)	1 38.2	west of north
South gable of Farmers' elevator	13 57.4	east of north
Northwest corner of high-school foundation	38 48.0	east of north
West gable of Mrs. Smart's cottage	77 07.0	east of north
Northwest corner of Mr. Leppert's house	53 36.5	west of south

Yankton, Yankton County.—The station of 1912 on Observatory Hill of the Yankton College Grounds, about three-fourths mile north of the town's center, was reoccupied. It is 205.1 feet southeast from the southeast corner of the observatory, 46.1 feet northwest of an elm tree, and 860 feet south of the main hall of the college. The station is marked by a Bedford limestone post 6 by 6 by 30 inches, projecting 4 inches above ground, and lettered U. S. C. & G. S., 1905. The following true bearings were determined:

	° ′	
Left edge of new courthouse tower (mark)	25 28.6	west of south
Flagpole on old courthouse	7 11.9	west of south
Cross on Catholic Church spire	0 06.8	east of south
Left edge of observatory at top of bricks	56 53.6	west of north
Base of spire southwest corner of main college hall	5 09.9	east of north

VERMONT.

Chelsea, Orange County.—The station is in the south side of the athletic field on the grounds of the public school. It is 369 feet from the southeast corner of the school building, about 47 feet from third base, and 20 feet south of the foul line running through third base. A large elm tree stands 158.5 feet to the west. The station is marked by a bronze disk set in the top of a cement post, 9 by 9 inches on top, flush with the ground. The following true bearings were determined:

	° ′
Monument of Calvin Goodwin (mark)	15 57.9 west of south
Vane on barn	60 24.8 west of north
Base of flagpole on school building	36 29.9 west of north
Vane on church	9 56.8 west of north

Newport, Orleans County.—The station is within the oval of the race track on the grounds of the Newport stock farm, about 1 mile north of the business section of the town. It is 82.5 feet east of the fence along the west stretch of the track and 5.5 feet south of the southernmost of a group of four large maples. The station is marked by a bronze disk set in the top of a granite post, 9 by 9 by 24 inches, set flush with the ground. The following true bearings were determined:

	° ′
Spire of Baptist Church, West Derby (mark)	19 40.9 east of south
Vane on Newport stock-farm barn	88 27.8 east of north
Pinnacle on county courthouse	23 25.4 west of south
Cross on west tower of Catholic Church	26 52.3 west of south

Richford, Franklin County.—The station is 1 mile northeast of the village in the grounds of the new cemetery, 29.2 feet from the north fence, and in a row of maple trees which are on the line between the part of the cemetery owned by the town and the part (to the east) controlled by the cemetery association. A maple tree 8 inches in diameter stands 12.2 feet to the north and a second maple 10 inches in diameter stands 44.8 feet to the south. The station is marked by a bronze disk in the top of a cement post 9 by 9 inches, set flush with the surface. The following true bearings were determined:

	° ′
Flagpole on town hall (mark)	52 52.0 west of south
Southwest corner of foundation of Mills monument	66 16.0 east of south
Rod on center of tower of All Saints' Church	48 43.8 west of south
Vane on belfry of schoolhouse	60 22.3 west of south

Seven auxiliary stations were also occupied. Station No. 1 is 2½ miles southeast of the village, in a meadow belonging to George Farmer, on a knoll about 50 feet east of the road. No. 2 is 2.1 miles northwest of the town hall, in a pasture on the west side of the road, on a hill sloping toward the east, ledges outcrop at the top of the hill. It is about 50 feet south of the Canadian boundary and about 100 feet west from boundary post 604. No. 3 is about 2.3 miles east of the principal station, in a field about 15 feet east of the road, and near the Canadian boundary. It is 0.1 mile southwest of line post 598. No. 4 is 2.5 miles southwest of the town hall. It is about 500 feet south of the railroad track and 50 feet west of a cross road which crosses the main road about one-half mile beyond the Berkshire town line. No. 5 is in the town of Montgomery, about 1 mile northwest of Montgomery Center. It is in an open field about 20 feet west of the road, near some large elm trees. No. 6 is in the corner of the schoolhouse yard in West Berkshire, near a large oak tree. No. 7 is in a large open field back of a barn, about 3.5 miles east of the principal station, in East Richford, and about 0.1 mile from the Canadian boundary.

VIRGINIA.

Emporia, Greenville County.—Observations were made as near the station of 1897 as the changed conditions would warrant (a high-school building was built about 15 feet from the south meridian stone). A new station was established in the northwestern corner of the lot which belongs to the county, and which is north of the high-school grounds. It is 142.3 feet northeast from the northeast corner of the horse-stall shed belonging to the high school and 83 feet east from the west boundary fence of the lot. It is marked by a granite post 6 by 6 by 54 inches, with a hole in the top to mark the exact spot, projecting about 6 inches above the ground. The following true bearings were determined:

	° ′
West gable of house across the street from Episcopal Church (mark)	12 41.4 east of south
Top of steeple of the Negro church	54 34.1 east of south
East gable of the house west of the Episcopal Church	16 39.8 west of south
Lower southeast corner of high-school building	11 20.6 west of south

A similar post 252.1 feet long, projecting about 6 inches above the ground, marks the south end of a meridian line lettered U. S. C. S.

Palmyra, Fluvanna County.—Observations were made over the north stone of the meridian line established in 1901, but on account of buildings being erected in the immediate vicinity it was deemed best to establish a new station one-half mile to the northeast. The new station is located in the field belonging to the old Petit estate, about one-half mile northeast from the town's center. This field is easily recognized by the first brick gateposts on the south side of

VIRGINIA—continued.

the road running northeast from the town. The magnetic station is just to the northeast of a grove of small pines and is marked by a limestone post 6 by 6 by 36 inches, lettered U. S. C. & G. S. S. M. with a hole in the top to indicate the exact spot. The following true bearings were determined:

	° ′
West gable of Dr. A. R. Gray's house (mark)	12 29.5 east of south
Top of cupola of Mrs. William Shepherd's house	0 46.8 east of south
Top of west brick gatepost at south entrance to field	89 25.5 east of south
Top of east brick gatepost at north entrance to field	37 56.0 west of north

The north end of a meridian line about 400 feet long is marked by a similar stone lettered U. S. C. & G. S. N. M.

Six auxiliary stations were also occupied. Station A is at the north end of the meridian line of 1916. Station B is 125 feet southeast of the 1901 north meridian stone. Station C is at the magnetic station of 1901, 65 feet southwest of the north meridian stone and 15 feet west of the meridian line. Station No. 1 is at Central Plains in the center of the field immediately west of the general store of M. I. Swoody, about 9 miles southwest from Palmyra. No. 2 is in a field about one-half mile west from the George homestead. No. 3 is in the southwestern part of the infield of the race track at the county fair grounds at Carysbrook, about 4¼ miles southeast from Palmyra.

Richmond, Henrico County.—Observations were made as near the station of 1901 as could be accurately determined, but on account of the proximity of an electric railroad and iron pipes a new station was established about 1,200 feet to the southeast. The station is in the southeastern part of the new reservoir park, about 2½ miles northwest from the town's center. It is 211.7 feet southwest from the curb next to the reservoir of the road on the southwest side of the reservoir and 200 feet northwest from the inside edge of the road along the southeast side of the park. It is in a grove of trees south of the reservoir. It is marked by a blue limestone post 5 by 6 by 33 inches, with a bronze disk set in the top, projecting 3½ inches above the ground. The following true bearings were determined:

	° ′
Top of Grace Presbyterian Church steeple (mark)	87 48.5 east of south
Top of St. Peter's Cathedral cupola	79 11.5 east of north
Top of park water tank	11 54.5 west of north

WASHINGTON.

Newport, Pend Oreille County.—The station is on the Silver Birch farm, 1 mile southeast of the town's center. The farm at present is owned by Mr. Charles M. Talmadge (local United States weather observer). It is about in line with the north side of the farmhouse and 84.3 feet west of its northwest corner, 25.7 feet northwest of a lone fir tree, 109.5 feet north of the fence which is just south of the road leading west from the house, 350.4 feet east of the Idaho-Washington boundary line. It is marked by a round cement post 12 inches in diameter and 30 inches long, larger at bottom, projecting 1 inch above the surface, and has a bronze disk countersunk in the center of the top. The following true bearings were determined:

	° ′
West edge of west ventilator on large barn (mark)	11 53.9 west of south
Idaho–Washington boundary monument	22 53.3 west of south
West gable of cupola on barn	87 56.9 east of south
Left edge of pump house	30 43.9 east of south

WEST VIRGINIA.

Parkersburg, Wood County.—The station of 1898 was reoccupied. Observations were made over the north monument of the meridian line at Parkersburg. This north meridian monument is in the city park, formerly the old county fair grounds. It is located in a clump of trees northeast of the old grand stand. The south meridian monument is 697 feet due south of the north monument, and is also in the city park, near the superintendent's house. These monuments are very heavy Cleveland sandstone posts, sunk with their tops extending a few inches out of the ground. The centers of copper disks set in the centers of the tops of these monuments mark the two ends of this meridian line. The following true bearings were determined in 1916:

	° ′
South gable of cemetery keeper's house on hill, one-fourth mile distant (mark)	20 42.0 east of north
North gable of house, 300 yards distant	69 28.8 east of south
North gable of park superintendent's house	0 11.2 west of south
East gable of house, one-third mile distant	74 21.3 west of south

WYOMING.

Fort Yellowstone, Yellowstone National Park.—The station is about one-half mile northeast of the north building at Fort Yellowstone, and just north of the ball ground and south of the target range. It is about 200 feet east of the main Gardiner Road. It is 1¼ miles south of the Montana-Wyoming boundary. It is not permanently marked.

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U.S. Coast and Geodetic Survey
Terrestrial magnetism

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